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National Technical Information Service

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Proposed Expansion of Existing Wastewater Treatment Facilities, Scottsbluff, Gering, and Terrytown, Nebraska

(U.S.) Environmental Protection Agency, Kansas City, MO

Prepared for

WAPORA, Inc, Washington, DC

Jan 79

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Kansas City, Missouri 64108

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6900 Wisconsin Avenue, N.W., Washington, D.C. 20015

16. ABSTRACT

The proposed financial assistance under the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) for improvement of publicly-owned sewage treatment facilities in the Nebraska Panhandle Area has been determined to be a major Federal Action. The Draft EIS includes a number of alternative courses of action; including, no action, limited action (upgrading existing lagoons by structural and operational modifications) stream discharge from upgraded facilities, stream discharge from new activated sludge treatment plant, land application, and complete retention. Each alternative is evaluated with regard to cost-effectiveness and environmental impacts; including, surface and groundwater effects, floodplains, water use, aquatic and terrestrial biology, land use, economics, health effects, air quality, noise, aesthetics, archaeological and historic resources, recreational impacts and environmentally sensitive areas. The Final EIS summarizes the selection process and recommends an alternative. Based on the draft EIS evaluation, stream discharge alternatives for the three publicly-owned treatment plants in the Study Area (located in Scottsbluff, Gering and Terrytown) were selected.

17. KEY WORDS AND DOCUMENT ANALYSIS

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Scotts Bluff County
WWTP-79

FINAL
ENVIRONMENTAL IMPACT STATEMENT
for
PROPOSED EXPANSION OF EXISTING WASTEWATER TREATMENT FACILITIES
SCOTTSBLUFF, GERING & TERRYTOWN, NEBRASKA

REGION VII

e.i.s

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII — KANSAS CITY, MISSOURI

JANUARY 1979

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
1735 BALTIMORE
KANSAS CITY, MISSOURI 64108

JAN 30 1979

OFFICE OF THE
REGIONAL ADMINISTRATOR

TO: ALL INTERESTED GOVERNMENTAL AGENCIES, PUBLIC GROUPS, AND CITIZENS

Enclosed with this notice is a copy of the Final Environmental Impact Statement (EIS) for the Proposed Expansion of the Existing Wastewater Treatment Facilities for Scottsbluff, Gering, and Terrytown, Nebraska. This document is submitted for your review and comment pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 (Public Law 91-190). All comments submitted to this Agency on the Draft EIS and our responses have been incorporated into the Final EIS.

This Final EIS has been placed in the public libraries listed below and is available for review in the library of the Environmental Protection Agency (EPA), Region VII.

1. Scottsbluff Public Library
2. Gering Public Library

The 30-day period required for a public review of the Final EIS before Administrative action can be taken begins on the date this EIS is made available to EPA, Office of Federal Activities, Washington, D.C. This date is anticipated to be January 30, 1979. Accordingly, comments received through February 28, 1979 will be considered. Please direct your comments to:

Edward C. Vest, EIS Coordinator
Environmental Protection Agency
1735 Baltimore
Kansas City, Missouri 64108

Please bring this notice to the attention of all persons who would be interested in this matter. We appreciate the time and effort you will spend in reviewing the EIS.

Sincerely yours,

Kathleen Q. Camin, Ph.D.
Regional Administrator

Enclosure

EPA-907/9-79-001

EPA-7-NEB-Scottsbluff -
Scotts Bluff County - WWTP-79

FINAL
ENVIRONMENTAL IMPACT STATEMENT
for the
PROPOSED EXPANSION OF EXISTING WASTEWATER TREATMENT FACILITIES
at
Scottsbluff, Gering and Terrytown
Scotts Bluff County, Nebraska

Prepared by
U.S. Environmental Protection Agency
Region VII
Kansas City, Missouri

With the Assistance of
WAPORA, Inc.
Washington, D.C.

Approved by:

JAN 30 1979

Kathleen Q. Camin, Ph.D. (Date)
Regional Administrator

ib

SUMMARY

Proposed Expansion of Existing Wastewater Treatment Facilities, Scottsbluff, Gering and Terrytown, Nebraska

( ) Draft (X) Final

Responsible Office: U.S. Environmental Protection Agency, 1735 Baltimore, Kansas City, Missouri 64108, telephone 816-374-2921.

1. Type of Action: (X) Administrative ( ) Legislative

2. Description of Action and Proposed Project: This environmental impact statement (EIS) was prepared in response to public controversy raised by public hearings held in April and September 1976 on proposals by the City of Scottsbluff to utilize sites north and south of the city for agricultural irrigation with treated wastewater. The boundaries of the Secondary Study Area, locations of the previously proposed north and south irrigation sites, additional irrigation and complete retention sites considered in this EIS, and the location of the Primary Study Area are presented on page v.

Because no single alternative was clearly superior in terms of cost-effectiveness and environmental/social impacts, the draft EIS was published without a Recommended Action.

This Final EIS summarizes the selection process and recommends an alternative. Based upon the draft EIS evaluation, stream discharge alternatives for the three publicly-owned treatment plants in the Study Area (located in Scottsbluff, Gering and Terrytown) were selected. The Federal action is the proposed financial assistance under the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) for the improvements of these three publicly-owned sewage treatment plants in Scotts Bluff County, Nebraska. Pursuant to the National Environmental Policy Act of 1969 (Public Law 91-19), Section 102(2)(c), the Environmental Protection Agency has prepared this Environmental Impact Statement (EIS) to evaluate the potential effects of the proposed actions upon the North Platte River, Scotts Bluff County, and the surrounding area.

3. Environmental Impacts: Each of the alternative treatment techniques is described in terms of its potential impact on the environment. The draft EIS (attached to this Final EIS) includes assessment of the impacts upon the following:

a. Surface water quality
b. Surface water quantity
c. Bloodplains
d. Water use
e. Groundwater
f. Aquatic biology
g. Terrestrial biology
h. Land use
i. Local economics
j. Health effects
k. Air quality
l. Noise
m. Aesthetics
n. Archeological and historic resources
o. Recreational resources
p. Environmentally sensitive areas

The Final EIS describes the potential impact on the environment for the stream discharge alternatives for Gering, Scottsbluff and Terrytown, Nebraska. The Final EIS includes assessment of the impacts upon the following:

a. Surface water quality (point source pollutant discharges to the North Platte River, non-point source pollutants generated by construction activities, nutrient input to Lake McConaughy).
b. Surface water quantities
c. Floodplain impacts
d. Archaeological resources
e. Economic impacts (major meat packing companies, residential user charges).

4. Alternatives: The alternatives available to EPA include:

A. No action - continue to operate existing municipal treatment plants in their present condition. As the contributing communities grow, the quality of effluent released to the river would continue to worsen.

B. Limited action - upgrade the existing treatment plants with modest structural modifications, and require pretreatment of industrial wastewaters from major meat processing plants. These changes would improve effluent quality to an unpredictable level. It is not expected that state effluent guidelines could be met reliably with this course of action.

C. Stream discharges from Upgraded Treatment Plants - in addition to modest structural modifications of the existing treatment plants, new treatment units would be installed for Scottsbluff and Gering. The new units would remove suspended solids particles from the lagoon effluents. Sludges generated from the effluent clarification units would have to be processed and disposed of.

D. Stream discharges from Activated Sludge Plants - a new activated biofilter treatment plant would be constructed at the site of the Scottsbluff lagoon system. This course of action would permit greatest control over effluent quality. Sludges would have to be processed and disposed.

E. Agricultural irrigation - lagoon-treated effluents would be used as irrigation water for crop production. Direct effluent discharge to the North Platte River would be discontinued; 1,067 to 2,550 acres of land would be required for storage ponds, buffer zones, and irrigation acreage. A portion of the treated effluent would pass through the soil to the groundwater table.

F. Complete retention - wastewater disposal would be by evaporation to the atmosphere; 355 to 1,781 acres of land would be required to construct additional lagoons. Lagoon leakage could release treated wastewater to the groundwater table. Direct effluent discharge to the North Platte River would be eliminated.

Regionalization alternatives considered in the EIS include:

- Complete Regionalization, relying upon a new 5.85 mgd activated biofilter treatment plant with effluent discharge to the North Platte River
- Joint Effluent Clarification and Algae Sludge Processing
- Joint Effluent Disposal by Complete Retention
- Joint Effluent Disposal by Agricultural Irrigation

5. Date Draft EIS available to the Public: January 1978
Date Public Hearing held on Draft EIS: March 1978
Date Final EIS available to the Public: January 1979

6. Comments requested:

Federal Agencies

U.S. Department of Defense, Army Engineers
U.S. Department of Health, Education and Welfare
U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service
  Forest Service
  Soil Conservation Service
U.S. Department of Commerce, National Oceanic and Atmospheric Administration
U.S. Department of Transportation, Federal Aviation Administration
  Federal Highway Administration
U.S. Department of the Interior, Fish and Wildlife Service
  Heritage Conservation and Recreation Service
  Bureau of Reclamation
  National Park Service
  Geological Service
U.S. Department of Housing and Urban Development
U.S. Department of Energy, Federal Energy Administration
Advisory Council on Historic Preservation
Missouri River Basin Commission

MEMBERS OF CONGRESS

U.S. Senators: J. James Exon Edward Zorinsky

U.S. House of Representative: Virginia Smith

STATE

State Office of Planning and Programming
Nebraska Department of Environmental Control
Nebraska Department of Water Resources
Nebraska Game and Parks Commission
Nebraska Department of Health
Nebraska Natural Resources Commission
Nebraska Soil Conservation Service
Nebraska State Historical Society
Nebraska Department of Agriculture
Nebraska State Geological Survey
State Extension Forester
State Agricultural Experiment Station
Nebraska Association of Resources Districts
University of Nebraska

LOCAL AND REGIONAL

City of Gering
City of Scottsbluff
City of TerrytownScotts Bluff County Health Department
Panhandle Resource Council
North Platte Valley Historical Association
Scottsbluff Public Library
Scotts Bluff County Planning Commission

INTERESTED GROUPS

Nebraska Environmental Coalition
Scottsbluff Star-Herald
Business Farmer
National Wildlife Federation
Nebraska Wildlife Federation
Izaak Walton League of America, Inc.
League of Women Voters
Nebraska Bass Chapter Federation
Nebraska Ornithologists' Union, Inc.
Nebraska Fisheries Society
Gering Courier
The National Grange
Committee of Concerned Citizens
Creighton Valley-Melbeta Committee
Sierra Club
Ducks Unlimited
Audubon Society
Natural Resources Defense Council

INTERESTED PERSONS

Dr. Larry Agenbroad
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Harvey Dutton
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Richard Gatch
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Burdette Kister
Dr. Leo Lucal
Richard Scott
Merle L. Staman
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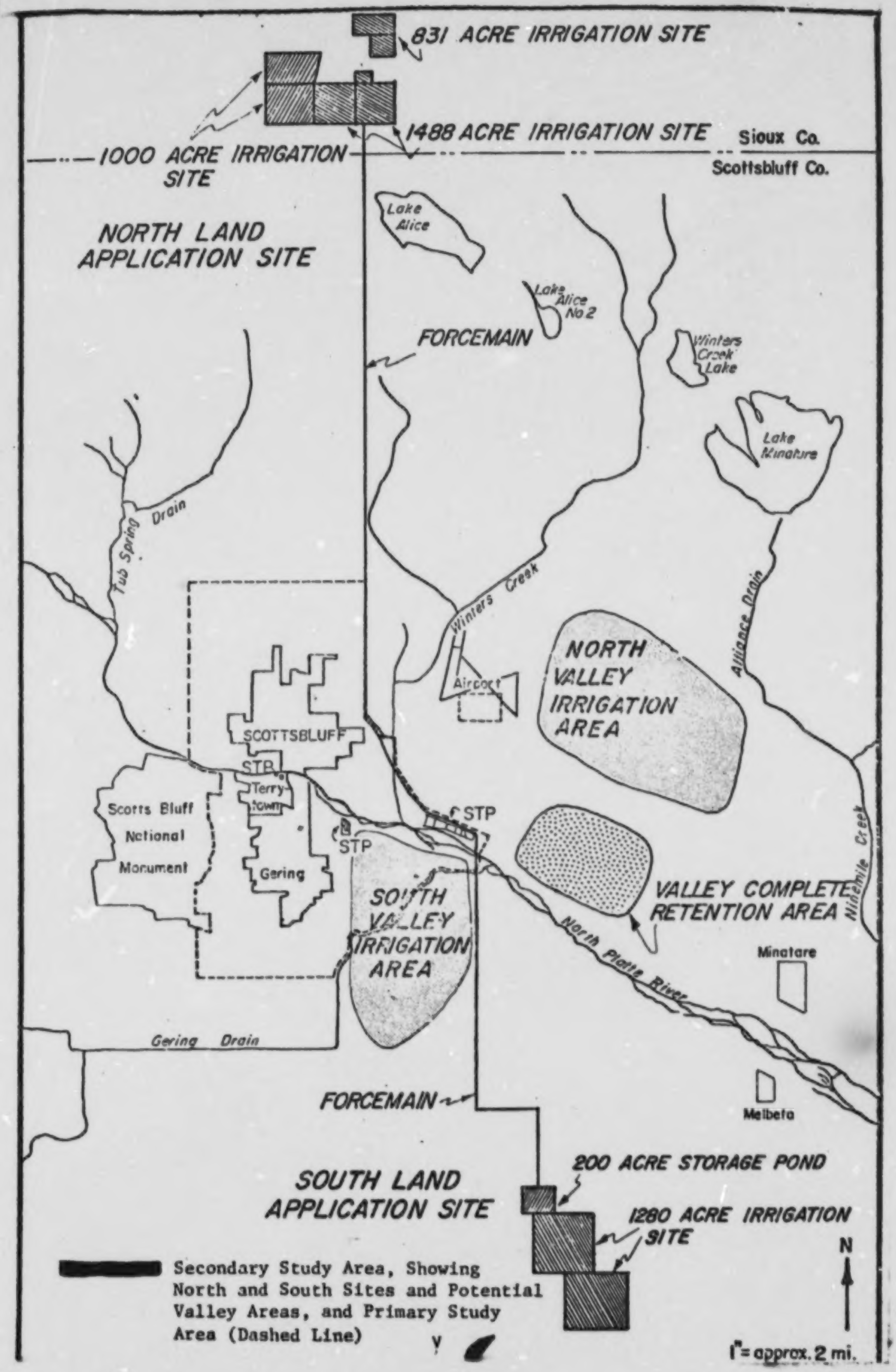
831 ACRE IRRIGATION SITE
1488 ACRE IRRIGATION SITE
1000 ACRE IRRIGATION SITE
Sioux Co.
Scottsbluff Co.
NORTH LAND APPLICATION SITE
Lake Alice
Lake Alice No 2
FORCEMAIN
Winters Creek Lake
Lake Minature
Tub Spring Drain
Winters Creek
Alliance Drain
NORTH VALLEY IRRIGATION AREA
Airport
SCOTTSBLUFF
STP
Terry-town
Scotts Bluff National Monument
Gering
STP
STP
SOUTH VALLEY IRRIGATION AREA
VALLEY COMPLETE RETENTION AREA
Ninemile Creek
North Platte River
Minatare
Gering Drain
FORCEMAIN
Melbeta
200 ACRE STORAGE POND
SOUTH LAND APPLICATION SITE
1280 ACRE IRRIGATION SITE
N
1" = approx. 2 mi.

▬ Secondary Study Area, Showing North and South Sites and Potential Valley Areas, and Primary Study Area (Dashed Line)

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- Number 2 - Transcript of the 1 March 1978 Public Hearing
- Number 3 - Comment Letters from Individuals
- Number 4 - Comment Letters from Federal, State and Non-municipal Local Agencies
- Number 5 - Comment Letters from Municipalities and Their Engineers: Scottsbluff, Gering and Terrytown
- Number 6 - EPA's Response Letters to Municipalities and Their Engineers
- Number 7 - Industrial Users Cost

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Chapter I

INTRODUCTION

The federal action which is the subject of this Final Environmental Impact Statement is the funding of improvements to three existing, publicly owned wastewater treatment plants in Scotts Bluff County, Nebraska. The municipalities which own and operate these facilities are Gering, Scottsbluff and Terrytown, Nebraska.

A Draft EIS for these projects was published in December 1977 and made available to the public and to federal, state and local government agencies. The Draft discussed in detail the background for the projects, the environmental setting, numerous alternatives for wastewater management, costs of the alternatives and environmental/social impacts of the alternatives. The Draft EIS is appended to this Final EIS by reference. Because no single alternative was clearly superior in terms of cost-effectiveness and environmental/social impacts, the Draft EIS was published without a Recommended Action. Region VII,EPA felt that additional public review and comment on the complex issues and tradeoffs brought out in the Draft was necessary prior to selection the Recommended Action or Actions.

A public hearing on the Draft EIS was held March 1, 1978 at the Panhandle Station Auditorium, Scottsbluff, Nebraska. Since the public hearing, letters of comment have been received from private citizens, interested engineering firms, the three municipalities and state and federal governmental agencies. EPA has responded to municipality comments in writing. The public hearing transcript, comment letters and EPA response letters are included in this Final EIS as Addenda 2 through 6. In addition, EPA personnel have met with state and local officials to discuss the selection of alternatives.

The letters of intent from Flanery Foods, Scottsbluff, Nebraska and Stanko Packing, Gering, Nebraska, are included in Addendum 3. The fate of the former Swift Plant in Gering, Nebraska has not been determined yet. Sale of the plant to Stanko is imminent. The anticipated use by Stanko is uncertain for both long and short-term.

Addendum 7 is an estimate of industrial user charges and cost recovery based on current waste loads and cost data. These are subject to variation depending on final bid costs.

The purpose of this Final EIS is to summarize the selection process that has been ongoing since publication of the Draft EIS. Chapter II describes the actions selected for implementation. Chapter III reports from the Draft EIS the most significant impacts of these actions. Chapter IV summaries comments made during the selection process and EPA's responses to the comments. Chapter V discusses the relationship between local short term uses of man's environment and maintenance and enhancement of long term productivity in regard to the Recommended Action(s). Chapter VI lists irretrievable and irreplaceable resources committed by the Recommended Action(s). Finally, several addenda are attached which include errata for the Draft EIS, a copy of the public hearing transcript and copies of letters of comment.

Chapter II

RECOMMENDED ACTIONS

A. Introduction

Based upon the Draft EIS evaluations of alternatives and substantial input from the public and from local, state and federal governmental agencies, the EIS process has resulted in the selection of stream discharge alternatives for the three publicly owned treatment plants in the Study Area. The selected alternatives make maximum use of existing treatment facilities. Descriptions of these alternatives including design and cost changes incorporated since the Draft EIS and remaining decisions to be made by the applicants are discussed in this chapter. Funding and implementation of these alternatives constitutes the Environmental Protection Agency's Recommended Actions.

In arriving at this decision, two alternative methods of wastewater management, agricultural irrigation and complete retention, were rejected. Reuse of treated effluent by agricultural irrigation was rejected because of the comparatively high life cycle cost of this approach. Several mitigating measures that may have been necessary with agricultural irrigation alternatives would have made the life cycle costs even higher. Complete retention was rejected because of implementation considerations raised by local officials -- acquisition of sufficient land for this alternative was suspected to require lengthy condemnation actions.

B. Scottsbluff Recommended Action

The Recommended Action for Scottsbluff is similar in most respects to Scottsbluff Alternative S.D. #3 considered in the Draft EIS. Several refinements have been incorporated in the description below.

1. Industrial Pretreatment

The Draft EIS discussed fine screening in combination with dissolved air flotation(DAF)as an example of technology that could acheive moderate levels of BOD, suspended solids, and oil and grease removal from Flanery Foods meat packing wastewaters. Estimation of present and future wasteloads and flows were based on sampling data acquired when the plant was under different ownership. Since the EIS process was initiated, Flanery Foods has undertaken a successful in-plant flow and waste reduction program including installation of intermittent wash hoses, improved slaughter room clean up procedures, operation of a fine screen and installation of a waste flow recorder and sampler. Sampling and flow monitoring of Flanery's wastewater on four days in September 1978 indicate that these measures have been even more successful in reducing pollutant loads than was assumed in the Draft EIS for Scottsbluff Alternative S.D.3. Flanery Foods' letter of intent (Addendum 3) to continue using the public treatment works requests much lower flow and wasteload allocations than assumed in the Draft EIS. This reduction may, dependant on Step 2 design studies, allow installation of smaller horsepower pumps for aerating the new aeration lagoon. This could result in nominal capital savings plus substantial operations savings for the municipality and system users.

2. Collection System

The only alteration to Scottsbluff's sewer system considered in the Draft EIS was rerouting of the Airport sewer to the headworks of the lagoon system. This can be accomplished in any one of three ways:

- Construct new gravity sewers along county roads north of the lagoon site (proposed in the Facilities Plan).

- Replace the existing Airport pump station and connect it to the lagoon flow distribution system by a force main.

- If microscreen units are installed at the Scottsbluff lagoon system, combine Airport sewer flows with microscreen solids to be pumped to the lagoon flow distribution system.

Rerouting of the Airport sewer is not a central concern of this EIS. A decision on design and funding of this rerouting will be made separately.

3. Treatment Plant Siting

The Scottsbluff lagoon system will continue to be the treatment site. In addition, approximately 10 acres immediately west of Lagoon Number 1 will be the site for a new aerated lagoon. Approximately two acres of land east of Lagoon Number 6 would be necessary for effluent clarification units depending on upcoming decisions concerning regionalization of these units.

4. Wastewater Treatment Processes

Upgrading of the lagoon system includes the following measures:

- Renovation of existing headworks with a sewage commutor, new flow measurement and recording equipment, and new raw sewage pumps and motors. The influent channel will be modified to allow installation of the commutor.

- Construction of an aerated lagoon with bentonite sealing, 10 day detention time and operating depth of 12 feet. Aeration will be provided by a diffused air system.

- Replacement of existing gravity flow distribution lines with a pressure distribution system from the aerated lagoon to the first four lagoons consisting of a pumping station and force mains with three 50/50 splits accomplished with wyes and balanced head losses between mains.

- Rerouting of flow through the lagoon system accomplished by a new outfall from lagoons 1 through 4 discharging to lagoon 5 and another connection from lagoon 5 to lagoon 6.

- Effluent clarification by microscreening. Discussion of pilot plant trials and combined effluent clarification with Gering are discussed in Section II.E.
- Construction of buildings to house microscreens, diffused air supply, laboratory and office.

5. Effluent Disposal

Microscreen effluent will be discharged to the North Platte River by a new outfall line. The location and size of this outfall is subject to a future decision on combined effluent clarification with Gering.

6. Sludge Disposal

Coarse solids will continue to be removed periodically from the standby bar screen. Continued disposal of this waste in the Scottsbluff municipal landfill should be reviewed by state and local officials.

Algae removed from lagoon effluent will be mixed with the water used to clean the microscreens. This slurry can be returned to the first four stabilization lagoons. A lift station and force main would be required for this purpose. No additional sludge processing would be necessary.

7. Costs

The "Estimated Total Project Cost" for the Scottsbluff Recommended Action is itemized in Table II-1, assuming that Scottsbluff provides its own effluent clarification. Costs for industrial pretreatment are not included in this table. The major industrial contributor, Flanery Foods, Inc., has instituted an apparently successful program of in-plant waste control. Costs for implementing that program are not available.

Table II-1

ESTIMATED TOTAL PROJECT COST
Scottsbluff Recommended Action

Stream Discharge
Upgrade Lagoons-Effluent
Clarification by Microscreening

	costs $ (x 1000)		
A. Modifications to Existing Facilities	Capital	Salvage	O&M
1. Comminutor, gates, flow measurement	100		
2. Airport sewer	115		
3. Outfall	33		
4. Force main distribution system	61		2
5. Aerated lagoon effluent pump	80		4
B. Aerated Lagoon			
1. Basin (using bentonite)	113	57	38
2. Diffused air system	272		70
C. Effluent Clarification by Microscreening			
1. Microscreens	583		36
2. Microscreen, diffused air, lab, operations building	200	100	
3. Lift station to microscreen	65	32	4
4. Piping	50	25	
5. Algae return lift station and force main	140	70	
6. Groundwater dewatering	70		
7. Chlorination for microscreen cleaning	35		5
8. Electrical, mechanical	77		
	1994	284	159
Service factor (x 1.27) for engineering administration and contingencies	2532		
Minus present worth of salvage value	- 74		
	2458		159

Total Cost: Amortized Capital Cost: $232,000

Total Annual Cost: $391,000

Cost in ¢/1000 Gal.: 33.27¢

C. Gering Recommended Action

The Recommended Action for Gering is similar in most respects to Gering Alternative S.D.2. considered in the Draft EIS.

1. Industrial Pretreatment

Renovation of the industrial wastewater treatment lagoons will include inlet structure modifications, new flow measuring equipment, new lift station pumps and motors, and a diffused air system for the aerated lagoons. Replacement of industrial lagoon piping was suggested in the Gering Facilities Plan on the basis of projected industrial wastewater flows. Major uncertainties in industrial flow projections for Stanko Packing and the Swift Co. plant should be resolved prior to replacement of lagoon piping. Removal of the existing sludge recirculation system for the industrial anaerobic lagoons should be reviewed in Step 2 considering present sludge accumulation, resolution of industrial flow and load projections, and the need to use these lagoons for disposal of algae slurries.

To avoid burning scum on the anerobic lagoons, control of oil and grease discharges from the major meat packing plants is required. Significant reduction of oil and grease loads by Flanery Foods in Scottsbluff indicates that control of oil and grease can be accomplished by in-plant modifications. Gering's sewer use ordinance, to be developed in Step 2, should specify reasonable levels of oil and grease discharges.

2. Collection System

Minor changes in interceptor routings at the treatment site may be necessary to accomplish recommended treatment modification.

3. Treatment Plant Siting

The City owns sufficient acreage south of the existing lagoons to locate a new 5 acre aerated lagoon for domestic wastes. Sufficient acreage is also available for a regional or Gering-only microscreen unit and operations building.

4. Wastewater Treatment Processes

The domestic flow metering and raw sewage pumping equipment will be renovated as described in the Gering Facilities Plan. A new aerated lagoon will treat all domestic wastewaters prior to final stabilization in existing ponds 1B and 2. The diffused air system for the new domestic aerated lagoon can be integrated with the air system for the industrial lagoons.

Effluents from the industrial stabilization pond, 1A, and from the second domestic stabilization pond, 2, will be collected and transported to a microscreen unit by a new lift station and force main. Microscreen pilot plant trials and combined effluent clarification with Scottsbluff are discussed in Section III.E.

5. Effluent Disposal

Microscreen effluent will be discharged to the North Platte River by a new outfall line. The location and size of this outfall is subject to a future decision on combined effluent clarification with Scottsbluff.

6. Sludge Disposal

Removal of coarse solids from standby mechanical bar screens may be periodically necessary. Use of the Gering sanitary landfill as a disposal site for this waste should be reviewed by state and local officials in regard to control of surface drainage into the landfill.

Algae slurry from microscreen units can be discharged to the industrial anaerobic lagoons for treatment.

7. Costs

The "Estimated Total Project Cost" for the Gering Recommended Action is itemized in Table II-2, assuming that Gering provides its own effluent clarification. Costs for industrial pretreatment by the two major meat packing companies, Stanko Packing and the plant previously owned by Swift Co., are not included in this table.

D. Terrytown Recommended Action

The Recommended Action for Terrytown is Alternative S.D.3 as described in the Draft EIS. This alternative includes stream discharge from the upgraded treatment plant, a new aerobic sludge digestion unit, new sludge drying beds and acquisition of an acceptable site for land application of dried sludge. Modifications to the activated sludge plant suggested in Appendix M of the Draft EIS should be considered in Step 2 design work. The "Estimated Total Project Costs" for Terrytown's Recommended Action is itemized in Table II-3.

E. Joint Effluent Clarification

Appendix K of the Draft EIS reviewed the merits of several effluent clarification methods. Dissolved air flotation with chemical coagulation was incorporated into Scottsbluff and Gering lagoon upgrade/stream discharge alternatives on the basis of reliability. Because of the relatively high

Table II-2

ESTIMATED TOTAL PROJECT COST

Gering Recommended Action

	Stream Discharge Upgrade Lagoons-Effluent Clarification by Microscreening		
	costs $ (x 1000)		
	Capital	Salvage	O&M
A. Modifications to Existing Facilities			
1. Inlet structure	30		
2. Lift station	64		
3. Flow measurement	12		
4. Piping, controls, manholes	121	60	16
5. Bank protection (rip rap)	78		
6. Electrical and mechanical	10		
B. Building for Microscreen, diffused air blowers, lab	180	90	
C. New Aerated Lagoon for Domestic Waste			
1. Basin (using bentonite)	73	37	27
2. Diffused air system (for industrial and domestic aerated lagoons)	376		80
D. Effluent Clarification by Microscreening			
1. Microscreens	467		32
2. Lift Station to microscreens	65	32	4
3. Piping	50	25	
4. Algae lift station and force main	120	60	
5. Groundwater dewatering	70		
6. Chlorination for microscreen cleaning	35		4
7. Electrical, mechanical	77		
	1828	304	163
Service factor (x 1.27) for engineering, administration and contingencies	2321		
Minus present worth of salvage value	- 79		
	2242		163

Total Cost: Amortized Capital Cost: $211,700

Total Annual Cost: $374,700

Cost in ¢/1000 Gal.: $43.13

Table II-3

ESTIMATED TOTAL PROJECT COST

Terrytown Recommended Action

	Stream Discharge Modifications to Existing Facilities		
	costs $ (x 1000)		
A. Modifications to Existing Facilities	Capital	Salvage	O&M
1. New Aerobic Digester and Equipment	$ 38		
2. Addition to Existing Building	11	5	
3. Chemical Feed System	7		
4. Flow Measurement and Sampling Equipment	8		
5. Site Improvements	2		
6. Electrical	13		
7. Mechanical	3		
8. Minor Changes to Flow Pattern through Existing Facility	10		
9. Drying Beds	2		1
	94	5	25*
Service Factor (1.27) - engineering administration and contingencies	119		
- Present worth of salvage value	- 1		
	118		25

B. Total Cost

Amortized Capital Cost:	$11,100 per year
Total Annual Cost:	$36,100 per year
Cost ¢/1000 Gal.:	39.64¢

*Total O&M for "Option IV - Modifications to Existing Facilities for Discharge Directly to North Platte River" in the draft Terrytown Facilities Plan, plus $1,000 per year for sludge drying bed O&M.

operational cost of this process, pilot plant studies to evaluate the effectiveness of microscreening were recommended in Draft EIS, Section III.D.2. The selection of stream discharge alternatives and active interest in microscreening by Scottsbluff, Gering, and their consulting engineers have lead to short-term pilot plant studies presently underway on Gering's lagoon effluents. Design and reliability factors of microscreening will be determined from these studies.

Scottsbluff and Gering have expressed interest in joint effluent clarification if this would provide cost savings to both cities. Preliminary cost effective analysis comparing costs for separate effluent clarification with regional effluent clarification indicates a reduction of less than two percent in the total present worth for the regional approach. This difference is too small for the Environmental Protection Agency to mandate regional effluent clarification as the cost effective alternative. "Estimated Total Project Cost" for upgrading of Gering's and Scottsbluff's lagoon systems and joint effluent clarification are itemized in Table II-4. The decision to regionalize is, therefore, left to the municipalities. It is recommended that this decision be made after the microscreen pilot studies, site selection, and subsequent Step 2 detailed cost analyses are performed.

Implementation of the regional alternative will require coordination with the Nebraska Department of Roads in regard to attaching the force main to the new 21st Street bridge.

Three different approaches can be used to assure responsibility for a regional microscreening facility and related effluent transport equipment:

- Formation of an independent sanitary district.
- Construction and operation by one of the Cities providing the service of effluent clarification to the other City on a contract basis.

Table II-4

ESTIMATED TOTAL PROJECT COST

(Joint Effluent Clarification and Algae Sludge Processing - Scottsbluff and Gering)

	costs $ (x 1000)		
	Capital	Salvage	O&M
A. Treatment - Scottsbluff			
1. Modifications to Existing Facilities	389		6
2. Aerated Lagoon	385	57	108
B. Treatment - Gering			
1. Modifications to Existing Facilities	315	60	16
2. Diffused Air System and Operations Building	450	37	80
3. New Aerated Lagoon for Domestic Waste	73	37	27
C. Effluent Clarification by Microscreening			
1. Microscreens	1049		51
2. Building	275	137	
3. Lift station to microscreens	65	33	6
4. Piping	75	37	
5. Algae lift station and force main	170	85	
6. Groundwater dewatering	70		
7. Chlormation for microscreen cleaning	50		8
8. Electrical, mechanical	120		
D. Lagoon Effluent Transport to Microscreen			
1. pumping station	134		15
2. Force main	216	108	2
	3836	591	319
Service factor (x 1.27) for engineering, administration and contingencies	4871		
Minus present worth of salvage value	-153		
	4718		319

Total Cost: Amortized Capital Cost: $455,300

Total Annual Cost $764,300

Cost in ¢/1000 Gal.: 37.39¢

- Joint construction and operation according to legal provisions of the Nebraska Interlocal Cooperation Act.

The decision on regionalization and its implementation should not delay other necessary steps to upgrade the existing lagoon systems.

Chapter III

IMPACTS OF THE RECOMMENDED ACTIONS

Environmental and economic impacts of the many system and regional alternatives were discussed in Section III.E. of the Draft EIS. Significant impacts of the Recommended Actions are summarized here.

A. Surface Water Quality

1. Point Source Pollutant Discharges to the North Platte River

Even with the present condition of the municipal wastewater treatment plants, water quality of the North Platte River downstream of the discharges satisfies current state stream standards for all parameters. Stream water quality parameters that would be affected by the Recommended Actions are BOD, ammonia, total dissolved solids and fecal coliforms.

The BOD load discharged to the river in the year 2000 will be approximately 1465 lb/day compared to the present discharge of 2000 lb/day. This improvement will occur despite increasing flows because of significant reductions in BOD effluent concentrations.

Under worst case conditions, ammonia concentrations in the river below the mixing zones could be increased during cold weather by 1.3 mg/l due to the effluent discharges. Combined with background river concentrations, this increase is not great enough to violate the 2 mg/l ammonia stream standard for cold weather. Natural oxidation of ammonia within the lagoons during warm weather will preclude violations of the 1 mg/l stream standard during this period. Within the mixing zones, ammonia concentrations will range up to the effluent's concentration of 5 mg/l in warm weather and 25 mg/l in cold weather.

State standards permit elevated ammonia concentrations in mixing zones. Mixing zones below the three discharges are expected to be short due to high velocity and turbulence of flow in the river.

Total dissolved solids concentrations in the North Platte River are naturally high. The maximum recorded TDS concentration above the three municipal discharges is 681 mg/l. Under worst case conditions, the continued effluent discharges could raise this maximum to 707 mg/l, well within the recently enacted state stream standard of 900 mg/l. The long term average TDS concentration of the river will be increased by less than one percent.

Elimination of short circuiting through the Scottsbluff lagoon system may reduce fecal coliform discharges to the river to an unquantifiable extent. Chlorination of effluents would provide positive control of fecal coliform discharges but this is not included in the Recommended Actions in order to protect rainbow trout which migrate through the receiving waters. Partial body contact standards for fecal coliforms in force below the discharges (McGrew) have not been violated in the past and are not expected to be violated in the future by the Recommended Actions.

The capability of storing wastewater temporarily is available in both the Gering and Scottsbluff lagoon systems. Effluent structures on these lagoons should be designed to insure storage capability for periods of extremely low river flow (less than the 7-day, 2-year low flow of 168 cfs) or when lagoon effluent quality may not meet discharge standards.

2. Non-point Source Pollutants Generated by Construction Activities

The Recommended Actions avoid most significant non-point source impacts of the other system and regional alternatives. Construction of aerated lagoons, installation of new piping, and land grading for new operations buildings have moderate potential for acceleration of sediment loss during and for a short time after (less than one year) construction activities. The potential for sediment loss from disturbed soil surfaces will be greatest during the summer when intense thunderstorms occur. Conventional erosion control measures can minimize and perhaps eliminate increased sediment losses from construction sites.

3. Nutrient Input to Lake McConaughy

Nitrogen and phosphorus compounds present in the treated effluents will contribute to the eutrophication of Lake McConaughy downstream from the Study Area. The three local municipal treatment plant discharges currently contribute 5.5 percent of the nitrogen load and 7.2 percent of the phosphorus load to this lake, which is the only reservoir on the Great Plains supporting a naturally reproducing trout population. Increased loadings related to increasing wastewater flows may be partially offset by removal of nutrients tied up in algal biomass. Industrial pretreatment methods used by major meat packing companies and the disposal method selected for algae slurries could have a significant impact on nutrient concentrations in the Scottsbluff and Gering lagoon effluents. The reduction in phosphorus load predicted in the Draft EIS for the lagoon upgrade alternatives (from 231 lbs/day to 50 lbs/day) is unlikely to occur because chemical additions to the effluent is not used with microscreening as it would have been for dissolved air flotation.

B. Surface Water Quantities

Municipal effluent discharges to the North Platte River from the three municipalities will increase from the present total average flow of 3.12 mgd (4.83 cfs) to 4.95 mgd (7.67 cfs) in the year 2000. During average flow conditions these discharges constitute a negligible proportion of the river flow. Assuming that Scottsbluff's and Gering's wastewaters will be stored during periods of flow lower than the 7-day, 2-year amount of 168 cfs, treated effluent would constitute up to 4.5 percent of river flow downstream of the municipalities. If effluent continues to be discharged during low flow periods, it would constitute up to 17 percent of river flow at the 7-day, 10 year low flow of 45 cfs.

C. Floodplain Impacts

All three municipal treatment plants are located in the 100-year floodplain of the North Platte River. These facilities are protected from the 100-year flood.

The only unavoidable long-term flood plain intrusion by the Recommended Actions will be the new aerated lagoon added to the Scottsbluff lagoon system. Approximately 10 acres of floodplain will be diked against the 100-year flood. The impact on upstream flood elevations is expected to be negligible since the existing lagoon system will remain the significant hydraulic control at this location.

The sites for individual or regional microscreen units have not been selected. Decisions on site selection should favor locations outside of the 100-year floodplain.

If the municipalities elect to regionalize effluent clarification units, a force main connecting the two plants will traverse the river and its floodplain. Incremental floodplain impacts of this forcemain will be negligible if it is installed in conjunction with the new highway and bridge construction planned to cross the North Platte River 1250 feet east of the Gering lagoons.

D. Archaeological Resources

Sites for new facilities required in the Recommended Actions have not been evaluated for their archaeological significance. These facilities are the new aeration lagoons for Scottsbluff and Gering, the forcemain needed to regionalize effluent clarification, and operations/microscreening buildings. Excavations for these facilities offer opportunities for discovery of possible buried archaeological sites in the first valley terrace.

Sites anticipated for new facilities should be reviewed by the Nebraska State Historic Preservation Officer prior to detailed design of the facilities.

E. Economic Impacts

1. Major Meat Packing Companies

The Recommended Actions require reductions in oil and grease wasted by meat packing plants in Gering and reductions in oil and grease plus BOD by Flanery Foods in Scottsbluff. Purchase and operation of equipment to effect these waste load reductions would be a privately borne expense which would affect the profitability of the companies.

Flanery Foods has implemented a program of in-plant waste control that is highly successful judging from limited data. It is reported that increased recovery of meat scraps to be rendered and savings in water supply costs resulting from Flanery's waste control program is substantially offsetting costs of the program. Similar in-plant control programs may be economically attractive to Gering's meat packing companies as an alternative to end-of-pipe pollution control technologies discussed in the Draft EIS.

In addition to waste control costs, industries will be required to pay user charges based upon flow and/or pollutant load. Industrial user charge fees will be established during Step 2 of the Construction Grants process.

2. Residential User Charges

Local costs to implement and operate the Recommended Actions include a fraction of the capital costs (7.5 to 12.5 percent) and all of the future operating and maintenance costs. These costs will ultimately be borne by users of the sewage systems.

Approximate residential user charges for the Recommended Actions with and without joint effluent clarification are presented in Table III-1. The annual user charges of $28.00 to $53.00 per year assume that all local costs for wastewater treatment are recovered as sewer use charges on the basis of flow. Neither repayment of outstanding municipal wastewater treatment bonds nor the municipalities' supervisory and billing costs are included in the figures.

Residential user charges in excess of one percent of family income are considered to exert a severe economic burden. Families earning less than $5300 per year in Terrytown, $3900 per year in Gering or $2800 in Scottsbluff will be so effected. 1977 poverty level income for a family of five was $6,810. Actual numbers of families paying more than one percent of income can not be determined from available data.

Table III-1

Local Costs of the Recommended Actions[a]

	Scottsbluff			Gering			Terrytown			Joint Effluent Clarification[c]				
	Total Capital	Local Capital	O&M	Total Capital	Local Capital	O&M	Total Capital	Local Capital	O&M	Total Capital	Scotts-bluff Capital	Scotts-bluff O & M	Gering Capital	Gering O & M
Upgrade Existing Facilities	774	96.7	114	764	95.5	123	94	11.8	25	N/A	96.7	114	104.8	123
Microscreen[b] Equipment and Building	1220	91.5	45	1064	79.8	40				1875	80.8	37.4	59.8	27.6
Effluent Transport										350	25.1	9.8	18.6	7.2
		188.2	159		175.3	163		11.8	25		202.6	161.2	183.2	157.8
Service Factor (Capital x 1.27)		239.0			222.6			15.0			257.3		232.7	
Amortized Capital Cost		22.5			21.0			1.4			24.3		22.0	
Total Annual Cost		181.6			184.0			26.4			185.5		179.8	
User Cost (¢/1000 gal.)		15.45¢			21.18¢			28.9			15.784		20.70¢	
Annual User Charge (5 person household)		$28/yr.			$39/yr.			$53/yr.			$29/yr.		$38/yr.	

[a] Costs in thousands of dollars except for "User Cost" and "Annual User Charge".

[b] Assumed eligible for 85 percent federal funding as an innovative treatment process.

[c] Capital and operating expenses for microscreen equipment, building and force main and lift station for effluent transport from Gering to Scottsbluff divided according to percentage flow contribution. Scottsbluff = 3.22 mgd and Gering = 2.38 mgd.

Chapter IV

THE SELECTION PROCESSES

A. Introduction

Many comments covering a wide range of topics have been made prior to, during and after the March 1, 1978 public hearing on the Draft EIS. The Draft EIS attempted to address all significant comments made on the project prior to publication of the Draft. Comment letters received up to December, 1977 are printed as Appendix A in the Draft EIS.

Comments made during the public hearing are paraphrased and responded to in Section IV B. below. Questions asked toward the end of the hearing were responded to immediately by EPA personnel and the EIS consultant. The topics discussed in this question and answer session are listed at the end of Section IV.B. The full transcript of the public hearing is included as Addendum Number 2.

Written comments made subsequent to the hearing came from individuals and from local, state, and federal government agencies. Comments from individuals are paraphrased and responded to in Section IV.C. and the letters published as Addendum Number 3. State and federal agency comments are paraphrased in Section IV.D and the letters published as Addendum Number 4. Comments from the affected municipalities and their engineering consultants are paraphrased in Section IV.E. and their letters published as Addenda Numbers 5, 6, and 7. Included in Addendum Number 6 are letters from EPA to Scottsbluff, Gering, and Terrytown discussing engineering and facilities costing details.

B. Public Hearing Comments and Responses

Myrna Johns:

C: Foundation of the area near the South Agricultural Irrigation site is hardpan, cracks in which will allow irrigation water to flow toward Melbeta.

R: As noted in the Draft EIS, the Brule siltstone underlying the South site may be fractured under some of the thin soils on the site. A hydrogeologic survey would indicate which specific locations should not be irrigated on the site.

C: Family has lived in area for 50 years and does not feel responsible for Scottsbluff's sewer system.

R: Comment noted.

John McLellen, Jr: Mayor of the City of Gering:

C: The price cited on page P-5 of the EIS for pasture land is $150 per acre. Recent engineering studies by Bell Galyaudt and Wells show that pasture land should sell for $300 per acre. Also, $1,900 per acre for irrigated land is low.

R: The land cost estimates are as accurate as possible without having a site specific real estate appraisal performed. Cost sensitivity analysis shows that higher land costs would not change the ranking of alternatives. For instance, if $300 per acre were used for permanent pasture land in Gering Alterative C.R.V., the total annual cost would add only $5,000 to the total annual cost of the alternative of $332,600 per year. This is approximately a 1.5 percent increase.

C: Land in the vicinity of the new highway and bridge planned to be built on the south side of the Gering Lagoon system would increase in value.

R: This effect of the highway project can be expected. However, its impact on alternative costs would be negligible.

C: Table III-27, Page 306 of the EIS indicates that the complete retention system for the entire valley site would cost 38.28 cents per 1000 gallons whereas the cost for the City of Gering would be 12.6 cents per 1000 gallons. Can not understand why the costs would be so different between Gering using complete retention independently versus cooperating in a regional complete retention alternative.

R: The comment points out the complexity of the information presented in Table III-27. This Table was presented to illustrate and quantify the principle stated in Section III, G. 2., Page 308:

> "Because initial capital costs are heavily subsidized by state and Federal governments while all operation and maintenance costs are borne by the municipalities and sewer system users, alternatives having low O&M costs will create the least economic burden locally even if they require substantial capital outlays...."

To illustrate this point, the EIS alternatives were ranked in Table III-27 on the basis of "Overall Treatment Cost" in cents per thousand dollars. This cost was taken from the Estimated Total Project Cost Tables in Appendix P. This is the cost that the municipality would have to pay if there were no state or Federal subsidies. The next column, " Municipal Costs to Treat" is an estimate of local cost to treat after the worth of subsidies are subtracted and other relevant changes to the costing methodology are made.

The comparison which the Mayor was seeking is between "Municipal Cost to Treat" for Gering Alternative C.R.V. (equal to 12.6 cents per 1000 gallons) and Regional Alternative R.C.R.V.(10.6 cents per 1000 gallons). For the regional alternatives, these average costs do not describe how the municipalities will share expenses.

C: The map on Page 4 shows the valley retention site but on Page 25 it is stated that no sites have been identified.

R: This point is already addressed in the note at the top of Page 8 of the Draft EIS.

C: If the complete retention alternative for Gering is cost effective, land would have to be purchased. Land designated in the Gering Facilities Plan is in the 100 year floodplain. This seems impractical.

R: Alternatives considered in the Draft EIS did not include any new lagoon construction in the North Platte River floodplain. The only area considered for complete retention basins in the Draft EIS is north of the river and completely out of the floodplain. One of the primary reasons for using effluent clarification in the EIS's stream discharge alternatives instead of long term storage and controlled discharge was to avoid lagoon construction in the flood plain.

C: Relying on evaporation to remove all wastewater from the cities is impractical.

R: It works in semi arid climates. In fact, some water will percolate through the pond bottom to supplement wastewater disposal by evaporation.

C: Can not see that the City of Gering wants to get into the agriculture business.

R: Comment noted.

Wayne Eisele:

C: There is an error in the cost calculations for agricultural irrigation of the north site by Scottsbluff.

R: There are two partially offsetting errors in the cost table. A revised cost table is included in the errata section of the addendum to this final EIS. These errors do not change the ranking of this alternative on the basis of cost.

C: The original proposal to use the north site for agricultural irrigation intended that the wastewater be sold to the landowner (Mr. Eisele) who would provide irrigation equipment at no cost to the government.

R: A range of property rights acquisition and income distribution options was thoroughly addressed in Section III. G.3. "Sensitivity of Agricultural Irrigation Costs to Assumptions about Land Acquisition."

C: Capital and O&M costs for a trapezoidal ditch of the Scottsbluff lagoon system seem unrealistic.

R: Selection of a trapezoidal ditch to distribute raw wastewater to the lagoons was not an appropriate design decision. Trapezoidal ditches are appropriate for distribution of relatively clean irrigation water during warm weather, but at the Scottsbluff Lagoons solids settling and freezing of raw wastewater would cause serious maintenance problems. Therefore, use of a force main with wyes and balanced head losses between outlets to the lagoons as suggested in a March 29, 1978 letter from Bell, Galyaudt and Wells to Mr. Frank Koehler (see Addendum 5) is incorporated as part of upgrading Scottsbluff lagoon system.

C: $150 per acre for permanent pasture at the complete retention site is too low.

R: Discussed above in regard to similiar comment from Mr. John McLellan, Jr.

C: Page 303 of the Draft EIS admits that the complete retention alternatives are designed small with the idea of a trial and error operation to find out the size that is needed. How can an adequate cost-effective analysis be done with this kind of monkey business?

R: In developing the complete retention alternatives, a design assumption was made that the lagoon bottoms would percolate at the rate of 1/8 inch per day. Design assumptions have to be made for all alternatives, especially those which have not been tried locally such as complete retention and agricultural irrigation. Uncertainties in design parameters can only be dealt with by working reasonable assumptions. The lagoon percolation rate is reasonable .

It was noted on Page 303 that the design and costs of complete retention alternatives were very sensitive to this assumption. If the percolation rate is reduced to zero, design size of the lagoons would double. The effect of this on the overall cost to treat (before state and federal subsidies) for Scottsbluff alone, System Alternative "Scottsbluff C.R.V.", is an increase from 28.74 to 35.91 cents per 1000 gallons treated, a 25 percent increase. This design change would make the alternative more expensive, instead of less expensive, than Scottsbluff Alternative S.D.3.

C: A rural water development project which imports water could mitigate the impact of ground water pollution from agricultural irrigation.

R: It is more practical to manage the application of irrigation water so that the ground water is not polluted. If this cannot be done cost effectively, it is unlikely that EPA would fund the alternative.

C: Use of alfalfa or irrigated pasture could reduce erosion potential at the north agricultural irrigation site.

R: Alfalfa is not an acceptable crop here because of its sensitivity to dissolved solids in the wastewater as discussed in Appendix N of the Draft EIS. Irrigated pasture would be acceptable and would help control erosion but its harvest value is lower than most row crops. Use of irrigated pasture would, therefore, make this relatively expensive alternative (Scottsbluff A.I.N.) even more expensive.

C: Drift of aerosols during spraying can be controlled by using low pressure, downward spraying irrigation equipment.

R: This is accepted practice. Other measures to reduce aerosol drift are discussed on Page 262 of the Draft EIS.

C: Wastewater irrigation has been tried and found acceptable in many other locations, some of which are not far from the Study Area.

R: Comment noted. EPA and Congress favor recovery of the nutrient and water resources in wastewater where it is the cost-effective solution.

Russell Worthman; Member, Board of Directors, Central Irrigation District:

C: The complete retention alternatives for Gering would take a lot of land away from the Central Irrigation District and destroy some of the distribution system to other land.

R: No site or area was evaluated in the EIS for complete retention in the Central Irrigation District. The "Valley Complete Retention Area" is located in the Minatare Irrigation District on the north side of the North Platte River.

C: The complete retention site is already plotted for residential development. "When this road is completed, the land along that will sell by the square foot just like the other Scottsbluff - Gering Highway."

R: The commentator apparently understands that complete retention lagoons have been proposed in the Draft EIS to be built on the south side of the river near Gering. This is not the case. Storage lagoons were proposed in the original Gering Facilities Plan but the site was not specified. New 100 acre stabilization lagoons described in the Draft EIS for Gering Alternatives S.D.1, A.I.V.1, A.I.S.1 and A.I.N.1 could be built on 80 acres of land already owned by Gering adjoining on the South side the existing lagoons plus an additional 20-30 acres of land to the east of and adjoining the 80 acres. This would not require acquisition of road frontage but would reduce the setback between the road and lagoons from 1500 feet to perhaps 800 feet.

Diane Schaneman:

C: Soils are clayish and hard and water table is shallow in the Melbeta area. The water table could easily get polluted.

R: Prior to establishing an agricultural alternative at the South site (or any site) a detailed hydrogeologic field investigations would be required to protect against such impacts.

Mrs. Rodney Schaneman:

C: Project will be only three miles from one land.

R. Accepted buffer zone between residences and spray irrigation sites is 600 to 1000 feet.

C: Wind data from the Scottsbluff airport does not apply to Creighton Valley

R: Comment noted.

C. A seep may develop in a cemetery near the South irrigation site.

R: This is possible but has not been investigated,

C: Scottsbluff has said it is no longer interested in the South irrigation site. Why is it still being considered?

R: All feasible alternatives were considered.

C: Chlorination of waste water prior to irrigation will not kill all viruses and may create cancer causing chemicals.

R: Viruses and chlorinated hydrocarbons will be effectively removed from the effluent by contact with the land and by volatilization. Viruses in aerosol drift could conceivably be a problem but insufficient research has been completed to address this conclusively. There is no epidemiological data to suggest that this is a problem.

C: The Surgeon General at the U.S. Army has noted that dissolved solids, nitrates and sodium could rise to unacceptable levels in receiving aquifers.

R: Ground water impacts were discussed in Section III. E. 5 of the Draft EIS.

Mr. Harvey Dutton, Chairman, Group of Concerned Citizens of the Creighton Valley and Melbeta

C: Consideration of the South site should be removed from the study.

R: Comment noted.

C: Supports continued discharge of waste water to the North Platte River

R: Stream discharge alternatives were evaluated in the Draft EIS.

Richard Gatch

C: At one time a dam was proposed on Old Muddy (Creighton Valley Creek?) costing one million dollars. That cost is not included in the EIS.

R: It was not proposed or discussed in the Draft EIS. It is not necessary for any of the alternatives.

C: Seepage and runoff would increase at the South irrigation site.

R: These impacts are discussed in the Draft EIS.

Harry Weber; Member, Scottsbluff County Planning and Zoning Commission

C: Concerned about contamination of ground water underneath the South irrigation site.

R: See responses to similar concerns from Diane Shaneman and Mrs. Harvey Dutton.

C: The Scottsbluff Planning and Zoning Commission has the responsibility of approving (irrigation) sites.

R: EPA will improve its communications with the Commission.

Ed Norum:

C: Complete retention is simply a liquid dump. It is not a recycling concept and therefore subverts the spirit of Public Law 92-500. I would like to see an indication of successful complete retention systems.

R: State water resources officials have stated that many stabilization lagoons in Nebraska never have a surface discharge because of the semi arid climate and/or percolation to groundwater. It is true that nutrient and water resources would not be recycled with this alternative.

C: Total costs for the irrigation alternatives of 50 to 60 cents per 1000 gallons are much higher than wastewater irrigation at Muskegon, Michigan, 22 cents per 1000 gallons.

R: The Muskegon cost is what the residents pay for use of the system. User charges in the Study Area for irrigation alternatives would range from 7.2 to 18.5 cents per 1000 gallons plus some increment to pay administrative costs and to pay back old sewerage bonds.

Sue Carlson:

C: Opposed to use of North site and concerned about leakage of the 12 mile long force main.

R: Comment noted. The point of primary concern with the force main is reliability of the booster pumping station. This could be dealt with appropriately by providing dual sources of power and by linking its operation to that of the pumping station of the lower end of the force main by automatic control mechanisms.

Amos Carlson:

C: Seepage from the holding pond at the North site will contaminate wells.

R: This was discussed in Section III E. 5 of the Draft EIS.

Dale Stamen:

C: Contractual arrangements for ownership of the North irrigation site may preclude its being broken up.

R: Comment noted.

C: The Pathfinder Irrigation District requires that all farmers put pipelines over irrigation canals, so they won't interfere with operation and maintenance.

R: Force mains would have to pump wastewater during winter so they should be buried to prevent freezing. They can be installed while the irrigation canals are not in use. The canals can be reconstructed to their original configuration.

Question and Answer Session :

Remaining statements and questions by the public were responded to during the public hearing in a question and answer session that concluded the meeting. Comments and responses are printed in the public hearing transcript, Addendum Number 2. Topics discussed were:

- Economics of pumping wastwater to the North site
- Health hazards related to spray irrigation at wastewater
- Groundwater impacts of spray irrigation

- EPA's responsibility to avoid potential but not fully proven public health hazards.
- Time table for implementation of wastewater facility construction
- Intrusion on North Platte River floodplains by complete retention lagoons.
- Useful life and design assumptions for complete retention lagoons
- Ability of the construction grant applicants to condemn land in Sioux County (North site)
- Location and site characteristics of the North site
- Level of design consideration and flooding impacts at the North site
- Use of dissolved air flotations for effluent clarification and sludge thickening.
- Erosion of complete retention lagoon lining
- Lack of specific sites in the valley complete retention and irrigation areas.
- Effect of wastewater total dissolved solids on crop selection.
- Need for EPA's coordination with other federal agencies

- Consideration of the human element in the EIS process
- Coordination between the cities and local citizens
- EPA's role in controlling non-point pollution from agriculture
- Land application on park and recreation sites in Scottsbluff.

C. Comments from Concerned Individuals

Comment letters were received from Mr. Wayne Eisele, Mr. Richard Scott, Mr. Merl Stoman, Mr. Amos Carlson, and Mr. Henry Stank. Messrs. Eisele, Stoman and Carlson spoke at the public hearing. Their public hearing comments were paraphrased and responded to in Section IV.B above. Other comments expressed in letters from individuals are paraphrased and responded to below.

Mr. Wayne Eisele

C: Public objections expressed at various hearings have been the greatest deterent to farm irrigation with wastewater for Scottsbluff.

R: Public objections to irrigation of Scottsbluff's treated wastewater were the basis for EPA's decision to prepare this EIS. Many of the technical evaluations presented in the Draft EIS were direct responses to the public's concerns. The basis for selecting non-irrigation alternatives, however, is cost-effectiveness. As developed by the EIS consultant, the total present worths of the least expensive irrigation alternatives were 28 to 55 percent higher than stream discharge alternatives with equivalent design flows and 43 to 70 percent higher than complete retention alternatives. Whereas the stream discharge alternatives may become even less expensive with substitution of microscreening for dissolved air flotation, mitigation of possible groundwater impacts could only make the irrigation alternatives even more expensive.

C: Public objections to agricultural irrigation with wastewater have not been property addressed in early public hearings or in the EIS. The experience of hundreds of operating irrigation projects was excluded from responses to the objections.

R: The Draft EIS is a long complex document, the full significance of which may be obsure to any but the most determined reader. Briefly, in regard to the impacts of agricultural irrigation alternatives, the adverse impacts can be avoided or mitigated by appropriate design and operational measures. Many of these measures were built into the design and costing of EIS alternatives. The Draft EIS notes, however, that extraordinary measures may be necessary to mitigate the impact of high total dissolved solids in the leachate on groundwater. The possible need and methods for leachate recovery and disposal or alternative water supplies can only be substantiated with detailed hydrogeologic field studies and modeling. EPA has not pursued this additional analysis because the basic agricultural irrigation alternatives are not cost-effective compared to other environmentally acceptable alternatives.

C. Cost estimates for alternatives in the Draft EIS are not accurate enough to make an intelligent decision for improving the Scottsbluff wastewater facilities.

R: The sources of cost data, costing methodology and detailed cost estimates are clearly presented in Appendixes K, P and Q of the Draft EIS. The level of cost analysis applied to the EIS alternatives is appropriate for selection among alternatives. Review of design and costing assumptions since the public hearing has led to minor changes in alternatives' costs (see EPA letters to Scottsbluff dated August 1, 1978 and to Gering dated August 2, 1978 in Addendum Number 6) but their cost ranking has not been changed by these considerations.

Mr. Amos Carlson

C: In order to insure proper use of wastewater in irrigation, Scottsbluff would have to buy the irrigation site.

R: Alternative control arrangements would be feasible and implementable.

C: Land committed to irrigation might later be entered into a federal soil bank program and taken out of production.

R: The land would be a critical element at a publicly owned wastewater treatment operation. It is highly unlikely that the federal government would subsidize both irrigation and soil banking of the same property.

C: Wind erosion while the irrigation site is idle during winter would turn the land into desert.

R: The potential for wind erosion of exposed soils was not addressed in the Draft EIS. Land management techniques as applied at farms near the various irrigation sites could mitigate this potential, adverse impact.

Mr. Richard Scott

C: Opposed to agricultural irrigation because of well and stream pollution, wind erosion, unsuitable soils for irrigation and tillage (site not specified) and potential for flooding and"open running" of wastewater.

R: These concerns have been addressed in the Draft EIS and in responses to various comments of record.

Mr. Henry Stanko, Stanko Packing Company

Mr. Stanko's letter of December, 1977 was directed to Mayor McClellan of the City of Gering. His letter constitutes a notice of intent(see Addendum 3) to continue discharging meat packing wastewater to Gering's sewage system. The letter requested initial capacity commitments of .108 mgd flow, 876 pounds of BOD per day and 860 pounds of suspended solids per day. The values are less than 50 percent of those calculated by the EIS consultant based upon water consumption data, a tour of the meat packing plant, an interview with plant personnel and monitoring data reported in the Gering

Facilities Plan. Mr. Stanko did not commit his company to any future increases in flow or organic load. No statement of intentions regarding oil and grease removal were included.

Mr. Merl Stoman

C: Because of nitrogen in wastewater, it will take very little seepage from storage lagoons at the North site to pollute groundwater.

R: This point was discussed in Section III.E.5.a. of the draft EIS.

C: There could be years of abnormal rainfall when this much irrigation would not be needed.

R: Excess rainfall would be a benefit to the irrigated acreage by increasing the leaching rate and by providing more groundwater flow to dilute the leachate. Excess rainfull would be harmful only if it occurred as thunderstorms which would increase erosion rates.

D. Federal,State and Non-municipal Local Agency Comments

William B. Patterson, Nebraska Acting State Conservationist, Soil Conservation Service, U.S. Department of Agriculture

C: Appendix F, Soils Suitability for Agricultural Irrigation and Site Soils, states that Keith soils, Ke, KeA, and KeB, are shallow soils. The soil symbol shown for Keith soils, KE, is not a map symbol.

R: The symbol shown, KE, is a typographical error. This is noted in the errata for the Draft EIS included here as Addendum 1. For agricultural purposes the depth of typical soils in this series, 4 to 5 feet, can be considered deep. For irrigation with wastewater, soils which may be less than 5 feet in depth were considered in the Draft EIS to be shallow. This is actually a moot point since keith soils do not occur at any of the agricultural irrigation or complete retention sites considered in the Draft EIS.

C: A list of mapping symbols for Scottsbluff County soils considered to be prime agricultural land was provided.

R: Soils included in this list (see SCS letter in Addendum 4) predominate at each of the three locations considered in the Draft EIS for agricultural irrigation with wastewater. A narrow band of Las Loam, Lt, which is a prime soil, borders the Valley Complete Retention Area on its south side. Other soils on and near this area are not prime agricultural soils.

C: Appendix N, Agricultural Management Factors for Irrigation Alternatives, did not mention tail water recovery systems as a means for dealing with surface water runoff problems associated with gravity irrigation.

R: This mitigating measure was discussed in Section III.E.1.b in regard to agricultural irrigation without specific reference to spray or gravity application. The costs for measures to control surface water runoff, however, were not incorporated into the alternative cost analysis presented in Appendix P of the Draft EIS.

C: The conservation practice of bench leveling and contour bench leveling is an alternative for gravity irrigation on land slopes up to 8 percent. A contour bench method at gravity irrigation would help solve odor and nuisance problems at spray irrigation.

R: Comment noted.

C: The Draft EIS was very thorough in content and presented adequate alternatives.

R: Comment noted.

John E. Raybourn, Regional Environmental Officer, U.S. Department of the Interior

C: The proposed expansion of existing wastewater treatment facilities would have no impact on trust lands or Indian people within the jurisdiction of the Aberdeen Area Office of the Bureau of Indian Affairs, which has responsibility for lands and to Tribes in the three States of North Dakota, South Dakota, and Nebraska.

R: Comment noted.

C: There should be no notable conflict between the proposed project and mineral industry activity or mineral resources in the area.

R: Comment noted.

C: The proposed expansion will not affect lands or programs administered by either the Bureau of Land Management or the Bureau of Reclamation.

R: Comment noted.

C: III.E.15.a. Impacts on Archeological Resources (page 285): It is acknowledged on pages 110 and 285 that thorough site investigations by professional archeologists including exploratory digging as well as continued consultation with the Nebraska State Historic Preservation Officer should be carried out in areas to be affected by project implementation. If an adequate review of project impact on archeological resources is to be conducted, archeological survey findings have to be presented in the environmental impact statement. Archeological surveys not yet undertaken for this project should be completed and the results evaluated before the final project design is determined. In addition, procedures for the evaluation of any archeological resources that may be encountered during project development should be included in the statement.

R: Since selection of the chosen alternative was based primarily on cost factors there is no need for extensive evaluation of archeological resources for every alternative. The cities will be required to contact and coordinate with the State Historical Society regarding the chosen alternative.

C: Pages 302-303: The potential for leakage through the liners used for the complete retention alternative is discussed; however, because of the importance of groundwater in the area, the statement should appraise more carefully the probable leakage through the various types of liners that might be used and make a related assessment of impacts on groundwater in sufficient detail to convey the magnitude of long-term effects. It does not appear appropriate to accept a high water table or a mounded water table beneath a complete retention facility. Page 223 comments that percolation rates through a pond liner at the Valley Complete Retention Area would be slow because of high water table conditions. Infiltration of groundwater into the ponds would be expected to be even more of a problem if the ponds must be deep enough to reach the water table. The statement should eveluate the effects on the groundwater reservoir of having groundwater continually in contact with the pond liner either because the bottom of the pond might be below the water table or because the leakage through the liner might result in mounding.

R: The valley site consists of various clay materials down to a depth of about five feet. This results in frequent ponding on the surface. It also restricts the upward movement of the groundwater. See the letter of August 1, 1978, to Scottsbluff, Nebraska in Addendum 6 which discusses the soil conditions. Attached to this letter is a copy of the pertinent pages from the Scottsbluff County soils report.

Also note that should seepage approach zero, then the size requirements for complete retention are almost doubled. This was outlined in the Draft EIS.

While the complete retention alternative was rejected due to potential land acquisition problems, there were obvious environmental concerns as well. Groundwater considerations were a major factor in evaluating all alternatives involving lagoons. The size of the complete retention lagoons (400-800 acres) was of concern in this regard. Also important was the sizable loss of water to evaporation each year. While this would represent a small percentage of the North Platte River's yearly flow, evaporation is one additional loss to a river that is continuously losing volume to irrigation and other activities.

C: Appendix R: We note that a discrepancy exists between recommendations made by Mr. Marvin Kivett, Nebraska State Historic Preservation Officer, in correspondence dated February 10, 1976 (which was paraphrased on page R-4 but not included in the draft document), and that dated September 6, 1977 (pages R-4 and R-1). The February 1976 correspondence apparently contained the recommendation that field reconnaissance be conducted for the south irrigation site at the City of Scottsbluff (page R-4). However, later correspondence dated September 1977 indicated that field reconnaissance of this area was not necessary (page R-1). In light of the lack of adequate discussion supporting the alteration of his earlier survey recommendations, we suggest that the State Historic Preservation Officer be contacted to clarify the need for field reconnaissance within the subject area. In addition, the results of such additional consultation should be included within the final statement.

R: A literature review of the archeological resources at the south site was undertaken in early 1976. That was the basis for the State Historic Society to certify in September 1977 that no additional investigations were necessary. The south site is no longer under consideration due to high life-cycle cost.

John E. Velehradsky, Chief, Planning Division, Corps of Engineers

C: The final EIS should clearly state whether any wetlands will be involved in the selected or alternative plans.

R: The selected alternative is not believed to impact any wetlands. Additional coordination with the Fish and Wildlife Service and the Corps of Engineers will be undertaken to clarify this.

C: The location of all borrow sites used should be described as well as the amount of deposition of dredged or fill material within the ordinary high water mark.

R: There is no intention to limit borrow sites at this early stage. The amount of fill material within the ordinary high water mark should be minimal. The Corps of Engineers and the Nebraska Department of Water Resources will be contacted in the near future regarding these concerns. Also, both agencies will be contacted during design for comments.

C: In addition, any channel changing the amount of riprapping needed or erosion control measures to be implemented in conjunction with the bridge across the North Platte River, should be indicated.

R: Since this is intended to be a suspended crossing attached to the underneath side of the bridge, there should be little or no impact on riprapping, etc.

C: You should also indicate when the force mains across Winters Creek and Gering Drain will be constructed and what the effects will be on spawning fish.

R: Alternatives requiring these force mains are no longer under consideration.

C: As you know, none of the facilities that will be built above ground level and that will obstruct flood flows should be built in the floodway. This includes pump stations and access facilities.

R: Every attempt will be made to minimize the effect on the floodplain. Given the current floodplain as mapped by the Corps of Engineers, the existing lagoons are the most significant obstacle to the North Platte floodwaters. The additional facilities required by the selected alternative will have little or no effect on the floodplain. The City will coordinate this matter directly with the Corps of Engineers as soon as more detailed site plans are available.

C: We feel that the archeological surveys (both pedestrian and literature) have been adequate; however, a pedestrian survey of the south site should be conducted before the final EIS is completed.

R: The south site has been rejected; therefore, no additional surveys are necessary.

Delvin M. Whiteley, Chief, Planning and Programming Division, Nebraska Game and Parks Commission

C: We would appreciate the opportunity to review and comment on the selected alternative should it involve one of the trout supporting streams or should it involve discharge to the North Platte River.

R: A copy of the final EIS will be forwarded since discharge to the North Platte River is anticipated.

C: In at least two instances, the report cites the "degraded" classification contained in the Nebraska Fish and Wildlife Plan, Volume II, Nebraska Fishery Resources Inventory - 1972. The discussions contained in this inventory relative to this classification indicate a limited fisheries management potential. Since publication, we have learned that diversion dams form barriers to fish movement and are apparently a factor in limiting the fishery. Through stocking of hatchery-produced walleye and catfish above these barriers, we anticipate a significant improvement in the North Platte River warm water fishery in the vicinity of Scottsbluff and for some distance upstream.

R: Comment noted.

C: The alternative most likely to affect threatened and endangered species is the Irrigation Alternative - North Site. In the event that this alternative is selected, we would recommend further study to ascertain presence of active prairie dog towns and possibility of associated black-footed ferrets, as well as swift fox, on the rangeland subject to conversion to irrigated crop production. We would appreciate the opportunity for review and comment of final plans for consideration in the design of this aspect of the project if this option is adopted.

R: This alternative was rejected.

C: It does not appear that differences in the potential impact on fish, wildlife and outdoor recreation resources for the alternatives included are of sufficient magnitude to suggest an agency preference.

R: Comment noted.

C: A primary concern with the Statement relates to its length and format. We did not record the considerable staff time required for our review; but if typical of time needed by the other reviewing agencies, it could represent thousands of dollars. One area in particular that appears amenable to streamlining would be the irrigation alternatives. This could be accomplished by separation into two distinct actions: waste treatment and irrigation.

R: The irrigation alternatives were the primary reason the EIS was prepared. The extensive discussion of these alternatives was necessary to address the concerns raised at facility plan public hearings held in 1976.

C: Such an approach appears logical under the institutional arrangements indicated by state enabling laws and federal assistance programs. In Nebraska, Natural Resource Districts are empowered to sponsor irrigation development. Possibly it could have been pursued as a North Platte NRD and Panhandle Resource Conservation and Development irrigation project and as such been eligible for planning assistance from the Soil Conservation Service. In the event that such an institutional arrangement was acceptable to the NRD, the municipalities could pursue design of a waste treatment facility(ies) alternative that would preserve the option should effluent use for irrigation be determined at a later date to be acceptable and feasible under a separate feasibility analysis - environmental assessment conducted by the NRD. Should the NRD decline the opportunity to participate, it would appear reasonable to assume that the irrigation options are infeasible.

R: The chosen alternatives for Scottsbluff and Gering involve the upgrade of existing facilities with discharge to the North Platte River. We have encouraged the communities to investigate any opportunities for land application of the treated effluent on nearby farms. It is doubtful, however, that a significant percent of their yearly discharge can be diverted to this use. The supply of irrigation water in North Platte is cheap and plentiful as clearly outlined in the Draft EIS. The marginal economic benefits are clearly illustrated by the cost analysis for valley irrigation in the vicinity of the current Scottsbluff lagoons. Assistance available from the NRD could be a long-term solution for Scottsbluff and/or Gering working in cooperation with local farmers.

C: In at least two instances, the name "Velson" is listed as a reference in the discussion of trout fisheries and stream habitat. This undoubtedly refers to Rodney Van Velson, Game and Parks fisheries research biologist stationed at Alliance. Please check this out and make the necessary corrections.

R: Comment noted.

Gayle H. Lewis, Chief, Planning Division, Natural Resources Commission

C: The Commission urges the communities involved to choose one of the regionalized methods. We recognize this is not the least costly alternative; however, we think the future conveniences and savings in operation, maintenance and monitoring of one facility rather than two or three would be of great benefit to the communities. We think it would be worth the cost of regionalizing.

R: The communities of Gering and Scottsbluff are being urged to participate in a regional effluent clarification facility. This was discussed with them in a joint meeting held on September 25, 1978. The costs developed in the EIS show little cost advantage to regionalization. The capital cost savings of a regional facility are almost exactly offset by the costs of building a lift station and force main from one city to the regional facility. Savings in operation and maintenance of a regional clarification facility (mostly in labor costs) are offset by O&M costs for the lift station previously mentioned. The two communities have been requested to analyze these cost factors in more detail to determine whether there is any cost savings that has been overlooked.

C: The commission has favored land disposal for Scottsbluff in the past because it meets the national goals of zero discharge of pollutants and resource conservation and reuse. However, the information on soils in the prospective disposal areas concerns us. We think there is a possibility of groundwater pollution. We recommend more intensive geological studies of the disposal areas be completed before this alternative would be chosen.

Other factors making land disposal less attractive: (1) irrigation water is now available at a low price in all the disposal areas,

(2) high energy requirements, and (3) native grassland might be disturbed. Land disposal would also be operationally more difficult to implement than the other alternatives. However, we think land disposal will remain a viable alternative if the concern about groundwater pollution can be alleviated.

R: While cost was a major factor in rejection of land disposal, the environmental factors mentioned here were also important.

C: This Commission recognized the benefits of complete retention which include meeting the national goal of zero discharge of pollutants, low energy requirements, and low sludge handling requirements. It would also require no discharge permit or effluent monitoring. We think this alternative should receive favorable consideration by the communities, as it was the lowest cost regionalized alternative evaluated in the report.

The concerns listed about groundwater mounding can be handled by proper engineering design.

R: As previously mentioned, complete retention was the least costly alternative considered. However, potential problems with land acquisition plus environmental considerations led to rejection of this alternative.

C: This (treatment and discharge) is a viable alternative which must be considered. However, the cost estimates in the report indicate that disinfection would not be necessary. We are surprised at this decision and are wondering if it was adequately evaluated. If disinfection were required, the cost would certainly go up. Since chlorination leaving a residual has been ruled out, some more expensive or more energy intensive disinfection method might be used. This would make this alternative much less attractive.

If disinfection is really not necessary, treatment and disposal may be a good choice as the water would be available for downstream uses and would not harm the migratory trout population. Discharge permits and effluent monitoring would be required.

R: This alternative was selected. Disinfection, however, is no longer required. The NPDES permits were revised in 1977 to reflect this change as allowed by the July 26, 1976, Federal Register. Data available suggests that stream standards for the North Platte River are being met, including those for fecal coliforms. Chlorination is potentially detrimental to trout migration and other more expensive disinfection methods are not justified.

Clinton D. Stevens, Floodplain Engineer, Nebraska Department of Water Resources

C: This department has reviewed the above captioned proposed project. According to Sections 2-1506.12 and 2-1506.14 of the Revised Statutes of Nebraska, the applicant should apply for a Floodplain Permit if the project is located within the 100-year floodplain.

R: The applicant will be required to obtain a floodplain construction permit as a condition of the Step 3 grant offer.

Dan T. Drain, Director, Nebraska Department of Environmental Control

C: On page 209, paragraph 2, the use of "permanent" to describe an aquifer or water table is misleading and scientifically inaccurate.

R: Agreed, an appropriate change as suggested by the commentor is noted in the errata for the Draft EIS, Addendum 1.

Other comments discuss the relative merits of surface discharge, complete retention, land disposal and regionalized alternatives. No response is called for. The reader is referred to Addendum 4 for the comments.

Mr. C.F. Nutter, Deputy State Engineer, Nebraska Department of Roads

C: Reference is made to the possibility attaching a force main to a new bridge planned to cross the North Platte River between Gering and Scottsbluff. Plans for the bridge are complete and a contract for construction should be let by Fall, 1978. Detailed comments concerning the need for coordination with the Department of Roads were submitted in a letter to EPA on July 18, 1977.

R: Comment noted.

C: It was difficult to locate some of the proposed treatment facilities as they relate to the road system in the area. The Department of Roads has large scale county road maps which could be made available.

R: Comment noted. Detailed graphics showing the local transportation system were not prepared for this EIS.

Carl O. Meier, President, Pathfinder Irrigation District

C: Pipelines crossing canals and laterals of the Pathfinder Irrigation District must be constructed over and above the system so as not to interfere with the operation and maintenance of the system.

R: This is a moot point for this District since only alternatives using the North site would require force mains in their service area. The Recommended Actions described in this Final EIS could affect irrigation only within the Minatare rrigation District. Site selection, design, and construction of new treatment units at the Scottsbluff lagoon system should be coordinated with the Minatare Irrigation District.

William M. Emerson, Scottsbluff County Planning Commission

C: The Environmental Impact Statement should have been brought to the Commissioner's attention early in the process of its being written.

R: EPA regrets the lack of coordination with the Commission. Required public notification procedures were followed during the preparation of the EIS.

E. Municipal and Engineer Comments - City of Scottsbluff

Comments transmitted to EPA by the City of Scottsbluff were made by the City manager, by the engineers who originally prepared the Scottsbluff Facilities Plan, and by the firm of Bell, Galyardt and Wells. Several comments are repeated in the various letters and memos but are presented and responded to here only once. A number of specific questions about engineering cost assumptions have been made. These assumptions have been reviewed by EPA and discussed with the grant applicants. They are not reviewed again here.

W. James Wells, Jr. and Charles A. Haas, 16 March 1978 Letter to Frank Koehler, City Manager, City of Scottsbluff

C: Oil and grease removal efficiencies by fine screening and dissolved air filtration of meat packing wastewaters as cited in the Draft EIS are higher than our experience indicates.

R: The EIS consultant acquired his data from EPA sponsored studies of wastewater treatment in the red meat processing industry. The actual efficiencies of the two treatment units in regard to oil and grease removal is not critical to the design or operation of the municipalities' treatment plans. The point is that oil and grease removal by Scottsbluff's main meat packer will have benefits to the municipal system and that substantial removals are feasible.

C: The use of a trapezoidal ditch to accomplish flow distribution in the Scottsbluff lagoon systems will cause maintenance problems.

R: That design decision was not appropriate. In addition to the problems cited by the commentor, a trapezoidal ditch may also not be capable of distributions the organic load equally to lagoons. The description of the Recommended Action includes a more appropriate design.

C: On page 134 of the Draft EIS it is stated that the heights of the lagoon dikes will be increased as proposed in the Scottsbluff Facilities Plan. This would be expensive and difficult.

R: It is also not necessary. The EIS consultant misinterpreted the intent of relevant statements in the Facilities Plan. The description of the Recommended Action does not include this feature.

C: Several cost estimates for items in various alternatives are not appropriate.

R: The costing methodology described in Appendix P is appropriate at this level of planning. A few corrections and additions are discussed in EPA letters to the City of Scottsbluff included in Addendum 6.

C: The EIS's cost for agricultural irrigation at the North site are not comparable with the similiar alternative in the facilities plan because the City will not have to purchase land or distribution equipment - it will be provided by the land owner.

R: The effects of land and distribution equipment ownership on the cost effective analysis and the local cost estimate are addressed in Section III.G.3 with very interesting results. Private ownership at the site does not change the cost effective analysis since it incorporates private costs directly related to the project. Local costs, however, increase because the municipality would not collect profits from crop production.

C: Under Alternative S.D. 4,Flanery Foods will be required to install a DAF system and anaerobic-aerobic lagoons. No design details are given.

R: The Draft EIS did not specify a type of pretreatment for Flanery Foods. It considered a range of waste load reductions, the most significant of which for design purposes was BOD. Page 127 of the Draft EIS states: "It is emphasized that these load reductions could be achieved by the meat packing companies by other means, including both process modifications and other types of wastewater treatment."

Frank U. Koehler, Scottsbluff City Manager, 27 March memo to the Mayor and City Council

C: The Draft EIS, pages 74 and 76,does not recognize the fact that the Nebraska Department of Environmental Control has modified its schedule of compliance in order to allow Scottsbluff to achieve construction by 1979.

R: Comment noted.

C: The Draft EIS did not account for increases in flow and load carried by the sewer servicing Scottsbluff Airport.

R: No growth projections specific to the Airport area were reported in the Facilities Plan or made available subsequently. For agricultural irrigation or complete retention alternatives, which have since been rejected, a new Airport sewer would not be necessary to achieve water quality goals regardless of the Airport sewer's flow. For stream discharge alternatives, there is a better case for routing this flow to the head of the lagoon system. This will provide a longer retention period and result in improved pathogen dieoff for this fraction of the total treatment plant flow. The Airport sewer will provide this advantage but will also induce growth to the east of Scottsbluff. The type of induced growth and its environmental social consequences was not evaluated in the Draft EIS because it was felt that the Airport sewer would not be necessary with the Facilities Plan's proposed action, agricultural irrigation. Rerouting the sewer's flow to the head of the lagoon system by force mains located entirely within the existing plant site is also possible, may cost less and would avoid induced growth. Costs for rerouting this sewer were not included in the EIS cost analysis of Scottsbluff's system alternatives. It was included in the complete regionalization alternative, R.S.D. 1, to cost $112,000.

C: It seems unlikely that both Gering's and Terrytown's wastewaters could be transported to the Scottsbluff lagoon site (Alternatives R.S.D. 1) using the present Scottsbluff interceptor as proposed on page 178 of the Draft EIS.

R: The only regional alternative which assumes that the Scottsbluff interceptor would transport Gering's and Terrytown's wastewaters is R.S.D. 1, complete regionalization with a two-stage, complete mix activated sludge plant at the Scottsbluff lagoon site. The assumption was made that sufficient capacity was available but sufficient data was not readily available for verification. This has become a moot point because R.S.D. 1 is not cost effective and additional interceptors that may be required would only increase the cost.

C: Municipal tax losses for land purchased by Scottsbluff should not have been included in calculation of the total present worths of complete retention and agricultural irrigation alternatives for two reasons: the tax losses would be County and not municipal and, for irrigation alternatives, Scottsbluff would not buy the land.

R: Including the tax losses as a cost element is appropriate in cost effective analysis regardless of which jurisdiction suffers it. As to the irrigation alternatives, the tax loss was included only where municipal ownership was assumed. The tax loss was not included as a cost for other methods (rental and private operation) of land acquisition considered in Section III.G.3.

C: Section III.E.15.a. does not reflect the fact that archaeological investigations have been conducted for the North and South sites and for force main routes leading to them.

R: The wording in the first paragraph of this Section is misleading. Appropriate changes are made in the errata, Addendum Number 1.

C: In Section III.G.1., Page 305, the term "administrative expenses" is used in a broad and unusual manner.

R: The term was meant to include any public works department costs for wastewater management not specifically itemized in the Estimated Total Project Cost Tables in Appendix Q or not included in the category of "repayment of past debts". The point is that the results of the alternative cost analyses cannot be used by themselves as the entire basis for projecting total municipal wastewater management costs for the alternatives.

W. Scott Rynearson, Bell, Galyardt and Wells, Inc.

C: The treatment alternative that is finally adopted should be one which is readily expandable or alterable to allow for future variance or even radical departure from design parameter assumptions.

R: Comment noted.

C: Theoretical siting assumptions used in the EIS may not always be practical or cost effective when actual construction is reached. Theoretical sites such as in the Valley Irrigation Area may never become available in the desirable area so the entire assumption is invalid.

R: Many assumptions must be made in developing and screening alternatives for cost and environmental impact comparisons. The possibility of some assumptions ultimately being found to be inaccurate is not a reason to preclude consideration of alternatives which may be attractive.

C: There is no discussion of nutrient application management for irrigating sugar beets during various periods in the growing season.

R: This was addressed on Page 242 of the Draft EIS.

C: If the source of boron in local wastewaters were identified and controlled, other crops could be considered for use in agricultural irrigation alternatives.

R: Flexibility in the use of crops would be desireable. High total dissolved solids would still preclude use of other desireable crops such as reed canary grass and alfalfa.

C: Will the boron concentration factor in the field be the same as that for total dissolved solids? What removals or losses of boron will occur through lagoon treatment and irrigation storage?

R: Boron is a conservative element (not lost through volatilization). We believe that the concentration factors calculated for TDS during lagoon storage are valid for boron.

C: Added costs of groundwater protection and surface runoff measures for agricultural irrigation and groundwater protection for complete retention may change the cost ranking of these alternatives. Shelter belt planting around irrigation sites also were not included in the cost analyses.

R: Available sites within the valley complete retention area have been judged to not require additional groundwater protection measures. These and other mitigative measures of agricultural irrigation sites would make these alternatives even less cost effective than they already are.

C: Regional alternatives did not address any of the practical items that the City of Scottsbluff will be left to administer.

R: WAPORA addressed the local management alternatives to the extent practical. Further discussion depends on the alternative chosen. We would be very interested in having the City's comments regarding these issues.

Frank U. Koehler, Scottsbluff City Manager, Letter of 16 August to EPA and Memo of 11 August to the Mayor and City Council

This letter informs EPA of Scottsbluff's selection of Alternative S.D.3, Upgrading of Existing Facilities. It also indicated a desire to investigate the feasibility of using microscreening for effluent clarification and to operate the clarification facilities jointly with Gering if it would be of mutual benefit. EPA supports these decisions.

The letter also reaffirms that the City's preferred location for the Airport sewer is as proposed in the Facilities Plan, along a County road north of the present lagoon system. This proposal was not an issue for which the EIS was written. A decision to fund the sewer has not been made by EPA.

F. Municipal and Engineer Comments - City of Gering

Comments transmitted to EPA by the City of Gering were made by the Mayor, by the engineers who originally prepared the Gering Facilities Plan and by the firm of Bell, Galyard and Wells. Many of the comments were similar to those previously discussed and are not repeated here.

John McLellan, Jr., Mayor, City of Gering

C. We hope a decision from your agency on the type of facility will not be one that forces us to build something we cannot feel will be equitable or conducive to our long term needs in planning.

R: Comment noted.

C: Any alternatives not mentioned in the statement should also have a feasibility decision available to us or be permitted to be studied for recommendation to us by a qualified Engineer.

R: The alternatives considered in the EIS were numerous and exhaustive. Design decisions and details for the Recommended Action will be made by your consultants in Step II design.

C: Cost efficiency for maintenance and operation over a long term should be predominate in the final selection of a facility for Gering.

R: EPA's decision to fund facilities is based primarily on cost effectiveness as measured by total present worth which accounts for capital and operating and maintenance costs for the facilities, the time value of money, salvage value of facilities useful more than 20 years and quantifiable, non-facility, direct costs and benefits related to construction and operation of the treatment works.

C: The recommended facilities should be selected in recognition of future changes in effluent pollutants.

R: The alternatives were designed and costed for operation over a 20 year planning period.

C: The recommended facilities should not cause undue economic hardships on our community.

R: The local cost burden for the Recommended Action, unfortunately, is higher than any other alternative considered in the Draft EIS. This is due to high operation and maintenance costs. These costs should be reduced somewhat by use of microscreening instead of dissolved air filtration.

W. Scott Rynearson, Bell, Galyardt and Wells

All comments were responded to in the previous section for Scottsbluff.

W. James Wells, Jr. and Charles A. Haas

C: The EIS assumed that clean cooling water from the Swift and Company meat packing plant will be removed from the industrial sewer system. New owners may not be willing to make this separation.

R: The uncontaminated cooling water from Swift and Company must be rerouted to storm sewers or recycled. This is one of the requirements of the model sewer use ordinance (Article V, Section 1) which the City would be required to adopt during Step 2.

C: Projected waste loads in the EIS for Stanko Packing are considerably higher than those developed in the Facilities Plan.

R: The loadings for Stanko given in the EIS are acceptable for the projected production of 250,000 lb LWK/day. The unit loadings were not increased. The unit loadings were taken from the 1976 survey. The major question regarding Stanko is the validity of their letter of intent. The letter gives initial anticipated loadings; we need projections for design year capacity. The letter estimates current flow at 600 gallons/1,000 lb LWK. This is a low figure which would represent above average in-plant controls for a meat processing plant. The City should clarify this point with Stanko and ask them to resubmit their letter of intent. Until then, we would prefer to use the loadings outlined in the EIS.

C: The EIS does not address costs to industry in terms of industrial cost recovery and user charge.

R: See Addendum 7.

C: Winter storage of lagoon effluent is absolutely necessary in conjunction with dissolved air flotation.

R: Those alternatives involving upgrade of existing facilities include both diffused air and dissolved air flotation. Should microscreening (see response to F.2.) be chosen for effluent clarification, an increase in treatment might need to be considered. This would be off set by the reduced capital and operation and maintenance costs for sludge. Therefore, we believe that the current cost estimates for SD1 and SD2 for Gering are reasonably accurate. Final treatment levels attainable would be determined from pilot plant testing of DAF and/or microscreening. The assumptions contained in the EIS for winter operation are based on the removal efficiencies currently achieved at loadings approaching 70 lbs/acre.

C: Microscreening should be further investigated as an alternative to dissolved air flotation.

R: This is being done.

Richard J. Kroon, Gering City Administrator, Letter of 26 July to EPA

C: The City Council of Gering has stated their preference to proceed with Alternative S.D.2, upgrading the existing lagoon system including a new aerated lagoon for domestic wastes and effluent clarification prior to discharge. The Council intends to conduct a pilot plant study of microscreening as an alternative to dissolved air flotation for effluent clarification.

R: EPA concurs in this selection.

G. Municipal and Engineer Comments - Village of Terrytown

W. Scott Rynearson, Bell Galyardt and Wells

C: The EIS's description of the hydraulic operation of the Terrytown treatment plant's final clarifier on Page M-2 was grossly inaccurate. The discharge launder was not designed to drain the entire plant through the final clarifier.

R: The problems listed on page M-1 or M-2 of the EIS represent problems that the Village needs to correct. The modifications given on Page M-3 of the EIS should be seriously considered by the Village. Whether the final clarifier launder can drain the entire plant is not important.

Barbara Carpenter, Mayor, Village of Terrytown

C: The Village Board reaffirms its position in favor of Option Number 4 described in the Terrytown Facilities Plan.

R: EPA concurs in this selection. Option Number 4 in the Facilities Plan is essentially the same as Terrytown Alternative Number 3 in the Draft EIS, upgrading the existing activated sludge plant and provision of additional sludge processing facilities. Recommendations for upgrading the plant made on Pages M-2 and M-3 of the Draft EIS should be seriously considered during Step 2 design work. Also, a sludge disposal site outside of the North Platte River floodplain should be acquired.

Chapter V

Relationship Between Local Short Term Uses of Man's Environment and the Maintenance and Enhancement of Long Term Productivity

The Recommended Actions impose minor demands on the local environment consisting primarily of committments of approximately 30 acres for siting of new treatment facilities adjacent to existing treatment works. Provision of treatment capacity for future growth will support residential, commercial and industrial development which will require additional land. Local electricity generation utilities will have to provide additional power supply for wastewater pumping, aeration lagoons and microscreen units.

Improvement in the quality of the North Platte River which receives treated effluents will not result in identifiable improvements or degradation of the river's uses or productivity. Nutrients in the effluents will continue to contribute marginally to eutrophication of Lake McConaughy, thus indirectly reducing the period of time that the lake will maintain high quality, cold water habitat for the naturally breeding population of rainbow trout.

Construction of aerated lagoons and microscreening units adjacent to the Scottsbluff lagoon system will encroach on the 100-year floodplain of the North Platte River but should not increase flooding potential of upstream areas. The three existing treatment plants will remain as obstructions during floods.

Addendum Number 1

Errata For the Draft EIS

Addendum Number 1

Errata For the Draft EIS

Page 13: Change "Due to overloading and inefficient operation of Scottsbluff's lagoon system . . ." to "Due to organic overloading, inefficient sewage distribution and the resulting inadequate treatment by the Scottsbluff lagoon system . . ."

Page 19: Federal, state, and local shares of the alternative costs are listed on page 254 not 259.

Page 31: In Figure II-2 the shadings for the Gering formation and the Chadron formation are reversed.

Page 39: Line 12, change "bedrick" to "bedrock".

Page 148: Next to last line, change "1/8" to "1/4".

Page 156: "Stream Discharge" is a higher order heading than indicated.

Page 185: Next to last line, change "racility" to "facility".

Page 209: Line 17, change "permanent" to "regional".

Page 253: Lines 19 and 22, change "Table III-22.1" to "Table III-21"

Page 285: Change first paragraph to read: "Structural facilities proposed in the various alternatives would not interfere with any identified archaeological sites. Investigation of the North and South sites and the force main routes leading to them did not reveal any potential for archaeological resources which would preclude proposed uses of the sites or require salvage efforts. Other force main routes, the Valley Complete Retention site proposed in various alternatives have not been investigated for archaeological resources."

Page F-4: Symbol for Keith soil is "Ke" not "KE".

Page G-2: Line 19, change "The waste loads, in pounds per 1,000 pounds LWK per day . . ." to "The 1976 waste loads, in 1,000 pounds LWK per day . . ."

Page I-1: Line 7, change "below" to "above"

Pages omitted in Appendix L: Draft EIS was sent with three pages omitted; therefore, the Appendix L in its entirety is attached.

Page N-9: Complete the discussion of Drainage with the following:

"Detailed, site specific soil studies must be undertaken at sites considered for irrigation. In evaluating conceptual alternatives, however, it is simply assumed that proper soils are available.

Possible problems with high water table elevations can often be controlled with adequate understanding of local groundwater conditions and provision of appropriate field drains, curtain drains, or recovery wells. Since the need for and the design of such measures have not been specified, costs for controlling water table elevations have not been included in the "Estimated Total Project Costs" tabulated in various tables and itemized in Appendix Q. Approximate increase in the cost to treat for a recovery well system is 1.6¢/1,000 gallons, which is 2.6% to 3.3% of costs for the various agricultural irrigation alternatives. Increases in the cost to treat if field drains were installed would be on the order of 3.4¢/1,000 gallons, or 5.7% to 7.1% of alternative costs."

Page Q-4: Part C should read:

C. Total cost

	Capital	Salvage	O&M
Project cost	6,135		381
-crop benefits			300
NET COST	6,135		81

Amortized Capital Cost	$579,100 per year
Total Annual Cost	$660,100 per year
Cost ¢/1000 gal.	56.58¢

APPENDIX L

DESIGN CRITERIA AND ASSUMPTIONS FOR UPGRADING THE GERING LAGOON SYSTEMS

Appendix L

Design Criteria and Assumptions for Upgrading the Gering Lagoon System

The Need for Oil and Grease Removal

Oil and grease from Swift Co. and Stanko Packing accumulate on the existing anaerobic lagoons to the extent that the scum layers must be burned off periodically. This unusual operating problem can be avoided by removing oil and grease from the industrial wastewaters. The most reliable method of removing oil and grease is dissolved air flotation preceded by fine screening. If the air pollution and nuisance problems are considered to be severe enough to warrant positive action, two alternative approaches to locating the screening and DAF facilities would be to treat the combined Swift and Stanko wastewater at a site adjacent to the existing pump station or at the industrial plants. Municipal treatment of the combined wastewaters could provide the monetary advantage to the industries of economy of scale. However, part of the combined industrial wastewater would be sanitary wastes from the plants. The presence of the sanitary wastes could preclude the plants from reuse of the screening or DAF sludges by rendering, thereby possibly eliminating any economy of scale advantages to industry. Siting the pretreatment facilities at the meat packing plants would permit exclusion of sanitary wastes from the sludges, insuring that they could be reused.

Anaerobic-Aerated-Aerobic Lagoon Treatment for Meat Packing Wastes

The use of an anaerobic-aerated-aerobic lagoon system for the treatment of meat packing wastes has been found to provide adequate treatment by the industry. Design considerations here involve upgrading the system to meet design flows and loadings.

With prior treatment of industrial wastes by screening and DAF, the BOD loads from design flows will not increase the organic loading on the anaerobic lagoons above the present level of 12 lbs BOD/1000 cu. ft. Acceptable design criteria for anaerobic lagoon treatment include BOD loadings of 12-15 lbs/ 1000 cu. ft. (White, 1970) although higher loadings up to 20 lbs/1000 cu. ft. have been cited: (EPA Technology Transfer, 1973). For this reason, and the fact that removal rates for BOD and TSS of 85% and 80%, respectively, were recorded for the Gering anaerobic lagoons in 1976, the present size and configuration of these lagoons is judged to be adequate. For design purposes a BOD removal of 80% is assumed for anaerobic treatment (White, 1970).

The draft Facilities Plan for Gering recommended that, because it had never been used, the sludge withdrawal piping and pumps for the anaerobic lagoons be removed. Prior to implementing this recommendation, the existing accumulation of settleable solids in these lagoons should be measured.

The present size of the aerated lagoons is also judged to be adequate for the aeration stage of treating industrial wastewaters for all of the treatment options. This conclusion is based on the existing level of BOD removal in the anaerobic-aerated lagoon system of 87%, an increase in retention times in the aerated lagoons that will occur due to a reduction in waste flow, and proposed replacement of present aerators with a new aeration system.

The retention times in the aerated lagoons will increase because of easily achievable reductions in water usage by Swift & Co. and Stanko Packing Co. Presumably the retention time in the aerated lagoons is 5.4 days. Future industrial waste flow is estimated to be 0.78 mgd compared to a present flow rate of 0.86 mgd which will result in an approximate 10% increase in retention time in these lagoons. A 60% BOD removal is assumed for the aerated lagoon system as has been reported in treating meat packing wastes (EPA Technology Transfer, 1973). Overall BOD removal efficiency of the anaerobic-aerobic industrial lagoon system is, therefore, estimated to be 92%.

Presently each of the three aerated lagoons has a 20 HP pedestal mounted platform type aerator which are claimed in the Facilities Plan to be in very poor condition and need to be replaced. The municipal engineers have preposed a conversion from mechanical aerators to a network of diffused tube aerators in each of the lagoons. In that the diffused air system offers advantages in cold weather operations, the use of the new system seems warranted. Each of the treatment options here, therefore, utilizes the diffused air type of aerated system. Horsepower requirements have been based on providing complete mixing in the aerated lagoons.

Assuming initial treatment of industrial wastes by screening and DAF and treatment efficiencies as described, BOD loading on stabilization pond #1A only is estimated to be 30 lbs BOD/acre. Where the entire 41 acres of stabilization ponds will be utilized, BOD loading drops to 13 lbs BOD/acre.

Industrial wastes estimated here for Stanko and Swift and Co. have a flow of 0.78 mgd with a load of 6400 lbs BOD/day reduced from 9400 lb BOD/day by prior screening and DAF. This waste load most closely compared with the Plan B in the Facilities Plan for industrial waste load. For the option described in this report in which the existing lagoon system is to be utilized solely for industrial wastes, all six anaerobic and aerated lagoons have been retained instead of abandoning one of each of these lagoons as proposed in the facilities plan. The resulting load on the 3 anaerobic lagoons of 10 lbs BOD/1000 cu. ft. and retention time in the 3 aerated lagoons of 6 dyas are within recommended design limits.

As discussed previously, it is assumed that industrial waste flows will undergo screening and DAF prior to lagoon treatment. The impacts on lagoon treatment efficiency if this assumption is defeated are discussed here.

Industrial waste loading without this preliminary treatment amounts to 9400 lbs BOD/day. In the option where both domestic and industrial wastes are to be treated in the existing facility, the proposed anaerobic and aerated lagoon systems will still be adequate to handle this higher load. BOD loading on the anaerobic lagoons will increase to 15 lbs BOD/1000 cu. ft. which is still acceptable, and retention time in the aerated lagoons will be unaffected. Assuming that similar BOD removal efficiencies will be achieved in these treatment steps as for the lower BOD load, the loading on stabilization pond #1A increases to 44 lb BOD/acre/day if DAF and screening of the meat packing wastes is not provided. If this stabilization pond were the only form of treatment, this load would be unacceptable compared to the 25 lb/day state standard. However, as the stabilization pond here is only one part of the treatment system including anaerobic treatment, aeration and a final treatment step of DAF prior to discharge, the adequacy of the total system should be considered. It is felt that elimination of screening and DAF prior to lagoon treatment does not preclude the option of treating both domestic and industrial wastes in the existing facility. Further consideration of this treatment plan rests with state review of the entire treatment system.

A final point in relation to treatment of industrial wastes at Gering is the need to allow enough oil and grease into the anaerobic lagoons to form a seal which is effective in eliminating nuisance odor conditions. If the treatment of industrial wastes by screening and DAF prior to anaerobic lagoon treatment removes too much oil and grease such that the seal in the lagoons is not sufficient to prevent an odor problem, then an adjustment in the level of prior solids removal will be needed. Industrial pretreatment or municipal preliminary treatment by screening and DAF, therefore, needs to be controlled so as to assure sealing of the anaerobic lagoons without allowing excessive scum accumulation.

Domestic Waste Treatment

As to the treatment of domestic wastes, the February 1977 Gering Facilities Plan assumed that a new 40-acre stabilization lagoon would be utilized for this purpose. Considering that, at State loading limitations, a 40-acre stabilization lagoon would be allowed to receive only 1,000 lbs BOD per day of the 2,515 lbs projected (including domestic, Lockwood Corporation, and future industrial growth), this proposed design has been re-evaluated and alternatives to a new stabilization lagoon have been investigated.

Assuming that the 500 lbs. BOD per day projection for future industrial growth is discharged to the domestic sewers, the total projected BOD load for any domestic wastewater treatment facility would be 2,515 lbs BOD per day. At the recommended design loading of 25 lbs BOD per acre-day, 100 acres of new lagoon would be required. Two 30-acre lagoons operated in parallel would receive the raw domestic wastes and would discharge to a third 30-acre lagoon, which would discharge in turn to a 10-acre lagoon.

Alternatively, the same approach could be taken in Gering as has been considered for upgrading the existing lagoon system in Scottsbluff: providing an aerated lagoon to achieve significant BOD reduction followed by use of the existing lagoons #1B and #2 to complete secondary treatment. The aerated lagoon volume required to provide 10-day retention time at the domestic sewage design flow of 1.6 mgd is equivalent to 16.0 million gallons, or 49 acre-feet. At a twelve-foot operation depth, 4.1 acres (5 acres, including dikes) of space would be required for this new aerated lagoon. This space could be provided on adjacent land owned by the City of Gering. Because the domestic sewage tributary to this aerated lagoon would not be expected to be particularly strong, a 75 percent reduction in BOD is assumed. At design loading of 2,515 lbs BOD per acre-day, the BOD load on Lagoons #1B and #2 would be 25 lbs BOD per acre-day if they all were constructed on adjoining land and 31.5 lbs BOD per acre-day if 5 acres of lagoon #1B were taken for the aerated lagoon.

In regard to final treatment of lagoon effluents prior to stream discharge, the same considerations of solids removal apply to the Gering industrial and domestic effluents as were reviewed above for the Scottsbluff lagoon effluent. Unavailability of 120 day storage volume in the existing Gering lagoon systems should not preclude continued use of those facilities. The Nebraska design standards do not speak to the possibility of eliminating the storage requirement. But considering that effluent quality is the basis for the storage requirement and that DAF can be expected to produce acceptable effluent quality, it would not be appropriate to include both solids removal and 120 day storage capacity in alternative design. Because solids removal processes can be added without significant taking or disruption of new land and because they offer a more positive means of controlling effluent quality, providing additional lagoon acreage for seasonal storage is eliminated from Gering's wastewater treatment options in favor of effluent solids removal. It is assumed that both industrial and domestic lagoon effluents will be combined prior to the solids removal unit. As in Scottsbluff, DAF with chemical addition is considered in alternatives costing to be conservative, but microscreening could possibly produce acceptable results.

A summary of design criteria for the wastewater treatment process options required prior to stream discharge of Gering's effluents is presented in Table L-1. These four options all assume solids removal from the effluent prior to discharge.

Table L-1.

Design Factors in Upgrading Gering's Existing Lagoon System

		Municipal Treatment					
	Industrial Pretreat.	Waste Load	Preliminary Treatment				
Option #1	No* Pre-treatment	IND 0.78 MGD BOD-9400 lbs/day TSS-11800 lbs/day	Screening & DAF	IND	Anaerobic Lagoons Existing Anaerobic	Aerated Lagoons Existing Aerated	Stabilization Pond(s) Existing ponds #1A, #1B, and #2
		DOM 1.6 MGD BOD-2500 lbs/day TSS-2900 lbs/day		DOM	New Stabilization Pond loading - 25 lb BOD/acre-dry depth - 3 ft area - 100 acres det. time - 38 days (120 total)		
Option #2	No* Pre-treatment	Same as Option #1	Screening & DAF	IND	Anaerobic Lagoons Same as option #1	Aerated Lagoons det. time = 10 days, vol = 7.8 MG, depth = 12 ft, H.P. = 59 HP area area = 2 AC.	Stabilization Pond Existing Pond #1A
				DOM	Aerated Lagoons det time = 10 days depth = 12 ft area = 4.1 acres (5 total)	Stabilization Ponds Existing Ponds #1B and #2	
Option #3	Screening and DAF	IND 0.78 MGD BOD-6400 lbs/day TSS-4100 lbs/day	None	IND	Same Treatment as Option #1		
		DOM 1.6 MDG BOD-2500 lbs/day TSS-2900 lbs/day		DOM	Same Treatment as Option #1		
Option #4	Screening and DAF	Same as Option Option #3	None	IND	Same Treatment as Option #2		
				DOM	Same Treatment as Option #2		

*Because of significant disposal problems with oil and grease on the anaerobic industrial lagoons some form of oil and grease removal is necessary. Alternative #1 and #2 assume this step will be provided by the City.

Addendum Number 2

Transcript of

1 March 1978 Public Hearing

Draft Environmental Impact Statement

BEFORE THE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

- -

In the Matter of: :

PUBLIC HEARING ON THE ENVIRONMENTAL :
INPACT STATEMENT FOR PROPOSED TREATMENT :
MENT FACILITIES IN SCOTTSBLUFF, :
GERING AND TERRYTOWN, NEBRASKA. :

- -

Panhandle Station Auditorium,
4502 Avenue I,
Scottsbluff, Nebraska.

Wednesday, March 1, 1978.

The above-entitled matter came on for hearing, pursuant to notice, at 7:17 o'clock p.m.

BEFORE:

TIMOTHY AMSDEN, PRESIDING OFFICER.

PENGAD CO., BAYONNE, N.J. 07002 · FORM 740

REC'D
MAR 17 1978
EPA CNSL
REGION VII

PENGAD CO., BAYONNE, N.J. 07002 · FORM 740

EPA PANEL

DAN VALERO

EIS, EPA.

ED VEST

EIS, EPA.

RALPH FLOURNOY

Engineering Branch, EPA.

MARIO NUNCIO

Engineering Branch, EPA.

BOB WAHL

Nebraska Dept. of Environmental Control

NATE BEASLEY

Nebraska Dept. of Environmental Control

JERRY PETERS

Wapora, Inc.

PENGAD CO., BAYONNE, N.J. 07002 - FORM 740

PARTICIPANTS

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John McLellen, Jr.	18
Wayne Eisele	22
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Diane Schaneman	29
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PROCEEDINGS

PRESIDING OFFICER TIMOTHY L. AMSDEN: Ladies and gentlemen, the hearing will come to order at 7:17 p.m. on March 1st, 1978. My name is Timothy L. Amsden and I'm the Assistant Regional Counsel for the Environmental Protection Agency in Kansas City, Region VII and I've been appointed by Kathleen Q. Camin, the Regional Administrator of Region VII, as the Presiding Officer for the hearing tonight.

The purpose of the hearing is to gather public input on the draft environmental impact statement for the proposed expansion of existing wastewater treatment facilities at Scottsbluff, Gering and Terrytown, Nebraska.

For purposes of the record of the hearing, I will offer both the order designating myself as Presiding Officer and indicate that the notice of the hearing was published in the GERING COURIER on January 26th and February 2nd and February 9th and in the SCOTTSBLUFF STAR-HERALD on January 25th, 26th and 27th. And I'll offer for the record of the hearing an affidavit of publication from the Scottsbluff paper but we have not received one yet from the Gering paper.

I'd like to introduce just a few of the resource people who are here tonight to kind of give you an idea of who you have to shoot or sling some arrows at. From

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the Environmental Protection Agency we have: Mr. Dan Valero and Ed Vest. Would you two gentlemen stand up, please? Ed Vest is in the back of the room, and this is Dan Valero. They're both with the Environmental Impact Statement Program.

Then we have Mario Nuncio and Ralph Flournoy both with the Engineering Branch. Mr. Jerry Peters with Wapora is with us tonight. And I'm sure that there are representatives of all three communities and other official representatives. And rather than identify you each at this time, I'll just wait until you come up to the podium and allow you to introduce yourselves.

We have two people from the State of Nebraska--excuse me for not introducing you--Bob Wahl and Nate Beasley. And these two gentlemen are right here in front.

Just so that we can run an orderly hearing, as you get called to make a statement, please come up here to the microphone so that our reporter can get a good and accurate transcript. After we've heard all the people who have indicated that they want to make a statement by signing our sign-up sheet, then we'll take anyone else who wants to make a statement, who so indicates by raising their hand and gets called upon. And after that we will take questions from anyone to anyone, one at a time, so that we can get a good and clear transcript.

The purpose of the hearing really is to gather public and input and we really have not selected an alternative. So this hearing is important. We really want to hear what the people here in the community have to say. And so help us run an orderly hearing so that we can get as clear and accurate a transcript as possible.

Also, if you don't want to make an oral statement but you have a written statement, please feel free to just submit the written statement to the court reporter. And if you have a written copy of what you're going to say orally, please submit that to him as well and it will be included in the transcript of the hearing.

Before we start hearing your input, I'll introduce Mr. Dan Valero, who will make some introductory statements.

DAN VALERO: My name, as said, is Daniel Valero and I work in the EIS program in the Regional Office of the Environmental Protection Agency. And I guess the best way to start is to give you some idea of the reason we're here tonight.

And that is, in 1969 a law was passed called the National Environmental Policy Act. And one of the significant portions of that law was to require all federal agencies to prepare environmental impact statements, so we refer to them as EIS's, for all of its projects which significantly affect the quality of the human environment. The Scottsbluff project has been designated as a significant project, and, therefore, we have under this present law decided to prepare an environmental impact statement with the technical assistance of Warpora, Incorporated.

One reason for this determination and a very big reason was that the controversies that arose at the previous public hearings were determined to be controversial enough to constitute a need for an EIS. Federal law requires that a draft environmental impact statement be reviewed by all affected agencies, state, local and federal, and by all organizations that may have some type of input into that process, and, of course, by you the citizens.

A very important point I'd like to make now is that you have, even after this hearing, ample time to still make written comments to the U. S. Environmental Protection Agency. The comment period lasts 45 days from the time that the notice of the draft environmental impact statement is published in the Federal Register. And the Federal Register date for this particular project is February 24th, 1978. Therefore, you have until April 10th to submit comments. We welcome your comments and we solicit them. As Tim said, it's very important that we receive this because we have yet not made a decision on this project. So we not only want your comments but we need them.

If you received an environmental impact statement in the mail and if you're on our mailing list or if you had a chance to see this in the library at the Regional Office or in the Scottsbluff Public Library--we had copies there for your review--you may have noticed that in the letter of transmittal we said that we expected it to be published February 10th and we made the date late March. But as a result of mailings and the snow and so forth, we found that it didn't get published until February 24th so it gives you an extra couple of weeks to make comments.

After we receive all your comments and after we get a chance to go over them with Wapora, Incorporated, we will then publish a final environmental impact statement where we respond to everyone of your comments that you either make at this public hearing or that you made or will make as a result of your reading the draft environmental impact statement and your letters that you submit there. We're required by law to do this. So, again, we have a legal responsibility to you as a citizen.

If all of these questions and comments are responded to adequately, and we have to make that determination, but if we feel that they have been handled properly by Wapora and ourselves, then we're ready to go with a decision. And that decision cannot be made until 30 days after you receive a copy of the final environmental

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impact statement. That means that if you still aren't quite satisfied with what we had to say or we didn't cover everything you said or if we just were totally off the mark, you still have a chance to make comments and make written notice to us that you would like for the record to have your input evaluated and we will during that 30 day period.

However, after that 30 days period, we can take action. It may be longer than 30 days but that's the minimum. And that 30 days will start from the time that we forward the final environmental impact statement to our Washington headquarters.

I'm the Project Officer for this particular project in the EIS Program in Kansas City. And it's been my responsibility to see that all the pertinent issues, at least most of the pertinent issues--hopefully, all of the pertinent issues, were covered in this statement. Now if you have any questions about the process or why we didn't include something or why we should have included something or why you don't think we should have included something, I'll try to answer your questions. A speaker who will come later, Ralph Flournoy, from our engineering program, will probably be able to answer some of your technical questions about different alternative screening processes that we went through for this environmental impact statement process.

But we again welcome your comments on

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either point and if we think that someone from the state or someone from the consulting firms can help you, then we'll have them answer your questions. We're just trying to get a form here where we can receive your input.

As Mr. Amsden said, the Scottsbluff project is unique in that we have not yet proposed a given alternative in our draft environmental impact statement. That's rather rare. Usually, we have a few alternatives and we have one that we think appears to be better, one that we consider to be the, quote, "proposed alternative," end quote. But that didn't happen in Scottsbluff and that's for a number of reasons. One is that we just don't have the information yet. We really aren't sure. We have a lot of givens and a lot of things that we have to decide before we make that final decision. So, again, we solicit your response to this public hearing.

In the EIS--and Mr. Flournoy will discuss this in much greater detail, I'm sure--but we did include alternative approaches to wastewater technology, effluent disposal and the comprehensiveness of the treatment program itself. That last set of alternatives, you may have noticed if you looked in the EIS, breaks down from municipal alternatives to more of a regional type approach. So we did include some information, as much as possible, on the Gering and Terrytown, as well as Scottsbluff.

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In order to assist you in reviewing this environmental impact statement, we've prepared, with the assistance of Wapora, a briefing document, because it is rather voluminous, the draft EIS itself, and I think that it will give you some idea of what we are striving to present in this EIS without really going into the details. If you are interested in certain aspects, you may want to consult further into the draft. If you'd like a copy of this--I see many of you have copies--but if you didn't receive one, we do have some available up front and I think we have a few back at the registration table. So feel free to take one or if you know of someone that might be interested in the project and hasn't received any information yet on it and would like an overview of the project, by all means take a copy for him.

If you haven't received as of yet a copy of the draft environmental impact statement, you can tell me after the hearing and I'll take your name and try to send you a copy as quickly as possible. As soon as I get back to Kansas City, I'll send you a copy. Or you can write EPA, Kansas City, and the address is U. S. Environmental Protection Agency, 1735 Baltimore, Kansas City, Missouri 64108. If you request a copy, we'll as soon as possible get one off to you because you do have time, I think, until April 10th, to go over it and make some substantive type comments.

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I'd like to reiterate the urgency of your participation in this alternative selection process, and I really welcome you to say what's on your mind and we really are looking forward to it. If you provide these ideas and concepts to us, you can either do it at this hearing or if you feel that you'd feel more at ease or you don't have enough information as yet to present it the way you'd like to present it, send us a comment letter and we will give it full attention, as full attention as possible.

Thank you very much.

PRESIDING OFFICER AMSDEN: Now I'll introduce Ralph Flournoy who is with the Engineering Branch of the Environmental Protection Agency in Kansas City, Missouri.

RALPH FLOURNOY: As he said, my name is Ralph Flournoy and I'm with the Engineering Section, Regional Office, EPA in Kansas City. This project is my responsibility as far as the technical aspects. In fact, the project will be mine once the EIS process is finished. So if there's input that people in this area still want to make after the process is completed, I guess I'd be the one to contact in Kansas City. If you've got questions after April 10th, that's basically when the commentary closes, as Dan said, at that point your best bet would be to get ahold of either myself or Mr. Nate Beasley at DEC offices in

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Lincoln if the time should grow so short that you can't get something written in.

I don't want to make any lengthy comments other than I do want to indicate at least what direction we're headed as far as trying to choose an alternative. As they've indicated, we at this point do not have an option selected, and, in fact, we do not as such have a favorite option that we're informally hoping will be the one that's implemented. We're hoping that enough comments arise from this hearing to define which alternative is going to be the best because we frankly feel that there are at least two or three alternatives which if implemented could provide the city with the kind of treatment they're going to be required to give their wastewater as required by the state permit and at the same time avoid some of the environmental impacts that were brought out at some of the previous hearings.

I would like to thank those of you who made comments and criticisms of the previous two hearings in 1976. I think some of the comments you made at that time, those of you who were at those hearings or made comments, were particularly valid and I think some of those comments were particularly helpful to us in writing this impact statement.

In terms of where we're headed, if you

look on Page 306 of the basic document itself or Page 38 of the summary, the smaller booklet, you'll see a cost table. That table simply ranks all of the alternatives proposed on the basis of cost, at least all of the factors that we know of now have been incorporated into those alternatives. And if you've got the main document, you've got a detailed cost summary of each and every alternative. I believe there were something like 32 or 33 alternatives considered, I think 10 for Scottsbluff, 11 for Gering and about 3 for Terrytown and there were about 9 or 10 regional solutions.

Incorporating those cost data and taking into account the environmental considerations which you feel like should be used in our final decisionmaking, we're going to try and arrive at a final alternative. If you'll look at the last two columns in that table, those figures have basically been ranked on the basis of national cost--or the second column from the right. The final column on the right-hand side gives the local share, the local cost over the life of the project on 1,000 gallon basis, how many cents.

I think part of the process is going to have to try and reach some alternative which does not necessarily result in a large expenditure of federal funds if it's not necessary, and at the same time does not impose an unusually large burden on the three towns involved here. So at this time, we'd like to hear your comments.

I would like to indicate that there was a fair amount of study done in this EIS on regional solutions which would involve combining the wastes from all three towns on some kind of unified basis. And given the amount of study that's been done, I think we are going to want to give a strong consideration to those alternatives, at least until such time as we feel like they can be rejected on a cost basis or on an environmental basis.

PRESIDING OFFICER AMSDEN: We'll take statements now from those of you who have indicated that you want to give one. When I read your name, if you'll please come up here, identify yourself for the record, your address if you wish, and any organization which you wish to represent in an official capacity tonight.

First of all is Myrna Johns. Is she here?

MYRNA JOHNS: I'm Myrna Johns and I'm from the Creton (phonetic) Valley area. I think I'll take my coat off so I can fight better.

Well, I haven't done a lot of thinking about this for some time because, well, I thought it was all over, more or less, you know, because we talked about this so long and, well, I just kind of had dismissed it. But I do have very definitely some things that I think--some reasons why you should not come out in the southern area.

One of them--and I suppose it's in this little book but I haven't had time to read it--so one of them is that the foundation of our area is largely hardpan, you know. Well, the nature of the water running off into these, it cracks the hardpan and the water will go into these cracks and follow that crack and that trail. Well, it goes clear down to the City of Melbeta--that we drain, our area drains down into the bit City of Melbeta. And, well, that's one thing that bothers me.

Another thing is that this area out here is our heritage. You know, we've lived there for 50 years now and we don't want--we don't--we aren't particularly interested in Scottsbluff's sewer system because we trade with Gering, we trade with Bridgeport, we trade with Torrington, we trade with Bayard, we don't trade just with Scottsbluff. Scottsbluff is not our municipal area. It is, you know, we go there once a week maybe but we also trade in all these other areas. So I can't feel very responsible--particularly responsible--I'm not nearly as responsible as I am to my neighbors and to the town of Melbeta.

Well then, I just don't--I just can't see how--to me I can't understand how you're going to--of course, I'm not a chemist and I'm not a scientist. But it just doesn't seem to me that it's feasible to bring this out into an area and try to irrigate with this sewage water and without--and do what you're saying you can do here. I just don't believe it. I'll just have to have it proven to me a lot more than so far it has been proven. So I can't feel very good about it and I certainly don't want to move off of my farm where we've raised our children and where we've put in 50 years of our lives. We're going to celebrate pretty soon 50 years out there.

And I just can't think that I want to move off. Also, I have some older people out there. Almost all the people out there are older people who have done the same as we have, lived there all their lives, raised their children there and they'd like to spend the rest of their lives there. I can't see that this is a very fair thing and I don't think it's--I don't think it's democratic process, I really don't, to impose this upon people who have given this many years of their lives. Besides, I don't think it'll work.

That's all.

PRESIDING OFFICER AMSDEN: Thank you very much, Mrs. Johns.

The second person who indicated he'd like to make a statement is John McLellen, Jr.

JOHN MC LELLEN, JR: I'm John McLellen, Junior, 1020 13th Street, Gering, Nebraska, Mayor of the City of Gering.

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There are a number of questions that I have with regard to the impact statement itself. One of them basically hinges on the land acquisition prices as stated in the impact statement. On Page P-5, price for acquisition of pasture land is $150. A recent study done by Bell, Galyardt and Wells for the City of Gering regarding acquisition of that same type property, our appraisal shows a figure of $300 per acre on pasture land.

I notice also that $1900 an acre figure is calculated for acquisition of irrigated land. I'd make comment with respect that considering outside forces beyond the control of anyone regarding the economic development of a piece of property, those particular prices could be very well understated too. With the relocation of the east highway between Scottsbluff and Gering, we're very definitely going to see some increase in the land that is next to that highway and happens to fall directly on the south side in the Gering lagoon system area. So acquisition of that particular land would be more costly than the document indicates.

We could see a cost effective study that to me would be more meaningful, I think, from the standpoing of the City of Gering being able to determine what's best for them to participate in. From the table titled Roman Numeral III, 27, Page 306 of the document, the figures for the City of Gering indicate that the complete retention

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system for the entire valley site would be 38.28 cents per thousand gallons. The cost figure indicated for the City of Gering is 12.6 cents. I can't see that the relationship between total cost for acquisition and later development of the total project would be that much different if the City of Gering were to be independently done on a complete retention system or if it were involved in a total retention system.

One of the interesting fzcts that I noted in this particular impact study also was on Page 4, the map shows the valley retention site and then on Page 45 it says that no sites have been identified. One of the problems that I had relating to that is the acquisition of land falls into a very difficult decision again as to what's most cost effective and where you should locate those particular sites.

If the compete retention system for the City of Gering is most cost effective, then one of the things we would have to do would be to acquire land to accomplish that complete retention. The land that's been designated in the study by Bell, Galyardt and Wells, that particular land which would be acquired lies within the 100 year flood plain of the North Platte River. This seems awful impractical to me. If we're going to clean the water so that it is being discharged at a consistency that is palatable to human beings, you can't simply put the location of an entire sewage lagoon in the floor plain.

Page 4, as I mentioned, mentions the complete retention system and being located on the north side. From the standpoint of the soil being not permeable in that particular location, the process of evaporation would be the one that would be necessary to remove all of that water from the particular affluent that would be discharged by all cities contributing to the total system. As a result, I feel this is an impractical approach.

One of the situations that was difficult for me to understand was the priority rating with respect to the compete package for all of the valley towns, and then in respect trying to pull out what was best for Gering. We're anxious to do what we can to improve the quality of the affluent that's being discharged by the Gering sewage treatment system. But at the same token, we'd like some figures in an environmental impact that gave us some directives that we could use that would give us an idea of which is the best way to go. It appears to me that cooperation might be the best approach to take in the whole thing. But an environmental impact statement such as this we have to know what Scottsbluff is doing as well as I'm sure they want to know what we are doing.

Now this has not been the case as the

City of Gering received notice that this public hearing was going to be held tonight. At no time did the environmental impact people come and visit with us. We had a meeting scheduled at 3:15 this afternoon. I sat for 30 minutes and no one showed up. The situation that we're looking for is for help, not for the fact that we get called to a meeting and have to sit and wait.

Final comment with respect to the agricultural proposal and using the effluent to irrigate agricultural crops. I have one personal feeling. We very definitely have a difficult time financing projects in Gering now. I can't see, with suppressed agricultural prices, that the City of Gering wants to get into the agriculture business and have trouble meeting those expenses as well.

PRESIDING OFFICER AMSDEN: Thank you very much, Mayor.

The next person I have listed here is Wayne Eisele.

WAYNE EISELE: I'll try to be brief. I don't have a lot to say. I wanted to mention on Page 24 the north site farm irrigation figures there, for some reason on that particular page, the present salvage value was added to the capital cost instead of subtracted giving us an error of $992,000. I don't think that makes us very cost effective.

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Along with the irrigation equipment and land being included in the north site proposal while that was intended that it be sold water, I'm not boosting for one or the other, somebody else can make that decision. But I think we ought to have accuracy there and the O&M would also be reduced substantially on this north site once they take out all that irrigation equipment and the application of the irrigation water which is never intended on the north site.

And another thing on that north site price, they're coming up with a $21,000 cost on a trapezoid ditch, I think down here in the Scottsbluff area, and then a $22,000 a year operating cost on that ditch. There's sure something wrong with the engineering there, it seems to me.

On this matter of this grassland that we were just hearing about valued at $150, down here east where they propose this total retention, calling it salt grass and valuing it at $150, being in the land business I'd like to buy a few hundred acres in that area for in the neighborhood of $700, $750 an acre. Anybody looking to sell, why, I'm serious, I've got a project that could use that. I think this $150 is just plain stupidity.

Total retention designed--on Page 303 they admit that their total retention project is designed small with the idea of a trial and error operation to find out the size that's needed. Now we can't come up with a

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cost effective basis when we're using that kind of monkey business to determine the cost. Whether it's good or bad, I'm not saying, maybe total retention is the one we need but we need the accurate cost basis on it.

Now there's been so many fears expressed on this farm irrigation and it's just as big a concern to me as it is to anybody else. And one of the things that might help that's not been suggested at all to reduce this fear is if a rural water system was proposed for the area near wastewater irrigation. In South Dakota, eastern South Dakota, there's an area there that has never had drinking water under it. They had to haul their water. In recent years they've put in 800 miles of pipeline to serve those farms with drinking water. This could be a solution for a water problem all over the country where they may have projects that the water table gets polluted. I think it has a lot of merit. I've installed a number of these rural water systems and I recognize the feasibility and the merit that it has. I think it ought to be investigated.

There's been some objections to erosion in the north irrigation site and I think this can be readily controlled with what crops are planted. It's ideal for alfalfa and irrigated pasture in that area if it goes to irrigation. And there's been objection to the drift from the spray. If these sprinklers were put on a low pressure,

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spraying downward and trees and hedges along the property line, then I believe this over-spray could be completely controlled.

Surface runoff has been feared. It could be controlled with dams at all the low points along the side of the project and that water pumped back to the system. It's really too valuable to let run away. It needs to be salvaged.

Now I have here a copy of the Environmental Protection Agency book, EPA-430/9-73-006. It's a survey of facilities using land application of wastewater. And there's a multitude of information in here that EPA has gathered up, and I think we should have had a lot of this information a long time ago but nobody has ever handed it to us. At Rollins, Wyoming, for instance, they've been irrigating with wastewater since 1880, ever since the town was, primarily alfalfa. Cheyenne, Wyoming, since 1881, with part of the water, alfalfa and grassland. Chadron, Nebraska, alfalfa.

I wonder if maybe people around here that are interested in wastewater irrigation or pros and cons of it, should I say, maybe ought to go to some of these nearer towns and see what's been going on there for years and years. Colorado Springs, they're selling the water for irrigation of lawns right there in town, as well as other uses, since 1953.

I think this is information that's good to have. And these older projects, many of them have been in operation a long time and they've been using absolutely raw wastewater, not treated in any form, not chlorinated.

Now, of course, it's a different picture. We're talking about chlorination as well as treatment in the lagoons so we have a lot higher grade of water. But they seemingly have been permitted to use this raw water for a long time.

Not only that, but there's hundreds and hundreds of other projects listed in this book and various dates that have been using this wastewater for many years. Now I've got a list of them here and I'd be glad to furnish it to anybody that's interested. It's just information that I think is good to have, so we can make legitimate judgments.

Another very interesting thing, on Page 90 in this book it tells us of a long list of projects and 49 percent of those projects have residents within 500 feet of the project.

Another interesting factor that has turned up is that people in other places where these projects are in operation are building new homes right up to them. Land developers are subdividing lots and building houses right up next to this wastewater irrigation, as well as, like I mentioned, in Colorado Springs, they're irrigating the lawns right there in town. It's very interesting to me. We talked about odors, I think this is information we needed a long time ago because if they're doing it that way, why would somebody go build a new house right under the gun when it was already there if it stunk too bad. I didn't go smell it, don't misunderstand me. I'm just telling you some of the things that we've learned in looking into this thing. It's a good thing to go smell them and that's the way you find out. Don't take my word for it.

Also, on Page 430 of this same book, they show pictures of a large acreage of tomatoes being grown in Mexico with untreated raw water, the sewage from approximately 150 million people--one million, five hundred thousand people of Mexico City's population goes to wastewater irrigation. The rest of the system is something else but one million, five hundred thousand population, that water is used for irrigation.

And it also tells us here that transporting of wastewater, large system, long distance. Existing systems, they're demonstrating the workability of this. Some have considered it infeasible. There's a number of big systems in operation piping it a long ways and they're considering--they think they've got good results.

Some towns are selling wastewater; some are giving it away; some have a waiting list of farmers wanting the water and other towns are farming with it and renting out the land for different operations. But there seems to be a lot of demand for this water and a lot of usage of it.

Another interesting thing on Page 156, sand, loan and silt soils were found to be the predominating soil types used in the many projects that were surveyed. Now this is information that our engineering firm has failed to give us, on other projects. And I'm not here to crucify any engineers but I'm going to say this: With my research and experience in wastewater irrigation, I'm going to say these fellows are playing with something they don't know much about and I think that the city that does consider wastewater irrigation they sure ought to get an engineering firm that has more experience in it than the ones they're dealing with.

Thank you.

PRESIDING OFFICER AMSDEN: Thank you very much.

Let me reiterate, when you come up, please identify yourself and your address if you wish us to correspond with you and have a good record of the hearing.

The next person who has indicated they want to make a statement is Mr. Russell Worthman.

RUSSELL WORTHMAN: Russell Worthman,

Route 2, Gering, Nebraska.

And I just wanted to comment on the total retention system for Gering. As a member of the Board of Directors of Central Irrigation, this would take a lot of land away from Central Irrigation that we can't really afford to lose and also it would destroy some of our distribution system to other land that's not affected.

And also, I'd like to comment on the cost effectiveness of this. Some of this pastureland that they've talked about is already plotted for residential development. And when this road is completed, the land along that will sell by the square foot just like the other Scottsbluff-Gering Highway.

That's all I have to say.

PRESIDING OFFICER AMSDEN: Thank you, Mr. Worthman.

Alvin Herbel, please.

(No response.)

Mrs. Diane Schaneman.

DIANE SCHANEMAN: Hi! I'm Diane Schaneman and I live on Route 1, Gering and we're in the Melbeta area and I am just going to reiterate a little bit of what's already been touched.

Our main objection in Melbeta is the clay, hardpan type of soil which we have. The water does not

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get away. Our sewer system at home is such an example. It just doesn't--it doesn't drain away. The soil is heavy and clayish. It's not sandy and I don't think lagoons would work.

We have an artisian well where we live. Our water table is that shallow and it's just like that all over Melbeta. I think that the water table would very easily get polluted and there would be a lot of lawsuits against this because a lot of people have already had their water checked now to prove that it's safe.

And as far as the lagoons go, I don't want them in that area. I don't think that it would be feasible at all to any of the people as far as the land or any situation would go. I just don't think it would work down there and I think the people would be sorry if they put them down there because I don't think the land is suitable for it.

Thank you.

PRESIDING OFFICER AMSDEN: Thank you, Mrs. Schaneman.

Mrs. Rodney Schaneman.

MRS. RODNEY SCHANEMAN: My name is Mrs. Rodney Schaneman and I'm also from the Melbeta area. This lady that was before me said that she had lived there for almost 50 years. Well, we're a young couple and we're just

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starting there. Our land value will decline. We have spent a lot of blood, sweat and tears and we have spent a lot of money improving our land. Our land values will go way down if this goes in. This project will be only three miles from our land.

We have a town there that will be only three miles away. We have a school; we have businesses. We have a lot of people living in that area. You will only have a three mile area left there if you put the proposal there. We take care of our own sewer. Why should we take care of somebody else's? Our water will not be suitable for drinking. We do not drain; we're in a low area.

The STAR-HERALD has just put out the "Partners in Progress" section in their paper. What partners in progress is this? We have a town but we won't have a town left.

Thank you.

PRESIDING OFFICER AMSDEN: Thank you, Mrs. Schaneman.

Mrs. Harvey Dutton.

MRS. HARVEY DUTTON: I'm Mrs. Harvey Dutton and I live in Creton Valley.

Now this Mr. Peters from Wapora, did you prepare that?

MR. PETERS: Pardon?

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MRS. DUTTON: Did you prepare the EIS statement?

MR. PETERS: We had a team of about ten people.

MRS. DUTTON: You yourself did it?

MR. PETERS: I wrote major sections of it.

MRS. DUTTON: You've got guts, Mister, to admit that.

Now somebody--whoever prepared it--said the wind never blows from the south out in Creton Valley. How many of you people have to wash the front of your house off from the dust from the roads from the south? Or how many of you have to clean your windows out every other day because the wind blows from the south from the road? O.K. But it never blows from the south according to the gentleman that wrote that.

Of course, he got all of his information from a machine from out at the weather station which happens to be quite a ways from Creton Valley, which isn't down in a valley; it sits upon a hill. Which isn't surrounded by hills. Now how can you prove something like that?

And then he put Cochran Lake (phonetic). Somebody said that they weren't sure whether that was seep lake or it was intentionally filled each summer. Now I don't

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know whether Mr. Cochran or Mr. Core runs their hose across the road to fill that thing each summer but now that's stupid.

And another thing, the cemetery down there, I suppose if you put in a lagoon system in that clay, it will seep into the cemetery. I suppose that means we'll have to move our cemetery out. Now we thought we--

Another thing is, Scottsbluff said that they were no longer interested in Creton Valley. Now I'd like somebody to answer why it was still included in all of these projects?

And Mr. Eisele's remarks about Mexico, you have the water for irrigation down there. I believe the aftermath of using their water in the fresh fruits and vegetables--up here it's called Montezuma's revenge.

And for watering lawn with treated sewer water, I think I read in one of the EPA books where some man contracted hookworms from golfing on a golf course that was watered with sewer water.

And there was something else that came up, the chlorination of sewer water. Now this is going to get rid of a lot of the bacteria, not so many viruses. But it hasn't been too many months ago when they decided chlorination in water causes a reaction with other things that was cancer causing. And yet you're willing to put that

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in lagoons and irrigation water out over our water to allow it to seep in.

Now that land out there blows because it is nothing more than layered clay. And to put that sort of thing over any of our water because it seeps down through those layers, it sure as heck is going to contaminate all the water, the underground river and the streams that run through there. Now they're not that big that it will dilute.

And here is something from the Surgeon General, U. S. Army. It says, "One major problem associated with land disposal operations is the elevation of total dissolved solids, nitrate and sodium concentrations in the receiving aquafires (phonetic). If such constituents rise to an unacceptable concentration undetected, no corrective action is possible." That means once that that goes in, seeps into our water, our drinking water, it'll be years before anything can be done about it. "Even if further waste application were halted, another potential problem with land disposal is the short circuiting of water flow within the reactive soil mass." Now that's from Environmental Protection Agency studies.

And your farming figures, that's something else. I believe you had--were going to irrigate from April until October. That means that you've got to put--let's see, that's five months, you've got to put twelve

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months' supply of water onto land within a five months' time. But I found an article that says that the growing season within Scottsbluff was approximately 16 to 20 weeks and that came from the National Oceanic and Atmospheric Administration. And they're going to put a year's supply of water over those acres.

And Mr. Eisele's green belt that they put around the lagoon so they don't smell, well, I understand there are a number of lawsuits still pending up in Muskegon, Michigan, because of the odor problem that has arisen from the lagoons up there. And I thought we were doing pretty good until the night the Lockwoods came around and stabbed us in the back, telling us we didn't know what the heck we were talking about.

But to put that in Creton Valley over layered clay I think would be a serious mistake and I do believe that lawsuits will arise from the Creton Valley area to the Melbeta area because of the drainage problem of the undergood and surface drainage.

Thank you.

PRESIDING OFFICER AMSDEN: Thank you, Mrs. Dutton.

Mr. Harvey Dutton.

HARVEY DUTTON: I'm Harvey Dutton, Route 1, Gering, Chairman of the Group of Concerned for Creton

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Valley and Melbeta.

And I too would like to know why the south side is in the study. The City of Scottsbluff indicated to me that they were no longer interested in this area and it looks to me like it's a waste of a lot of time and money for the study to be continued on the south side. I would like that removed from the study.

And another thing on this water, our river here is almost entirely used for irrigation. And so if this water is cleaned up to the extent Scottsbluff says it will be for the purpose of irrigation, I can see no reason why it can't go into the river and continue to be irrigation water without looking for more land to use it on. The river itself dilutes the water. This water has been going in there for I don't know how many years, ever since the lagoons were built and probably before that. And as near as we know through the dilution in the river has never caused any trouble. And I can see no reason why this cannot be continued.

That's all I have for now.

PRESIDING OFFICER AMSDEN: Thank you, Mr. Dutton.

Mr. Richard Gatch.

RICHARD GATCH: I'm Richard Gatch from the Creton Valley area. I live southwest of Melbeta.

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I want to say that the water here that they're putting on the ground is just too much for it to take up and there's going to be run-off going down on Old Muddy. And at one time they were proposing to put a dam across that area and it was going to cost about a million dollars or a little over. So I don't believe that was put into the site here on what that cost would be.

The water table there is already high due to seepage from the irrigation system that's already been put in before and I think that should be brought up again. That if you add this much more water to that ground, seepage is going to be that much worse.

I think it's fine if the cities want to use the water for their lawns, I think they can get rid of a lot of water that way and maybe they wouldn't even have to take it anywhere else for irrigation.

We also have 100 year floods in our area too, not only in the floor plains of the river. And no matter what you put out there, if you build for 100 year flood it's going to cost a lot of money because we are hilly, it's rolling ground out there and we do have sites where the water does run right past Melbeta into the river.

Also in the past year there's been some rezoning out there and I'm sure that the people that have done that would be very much against this.

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In the study, people knew that there was a lot of complaints about putting this system in in a retention site or irrigation site and I wonder why they didn't have more of a system put in their study that would take care maybe of the garbage and the sewage at the same time so that they could burn one and get rid of it so that the landfill sites that they said was going to be done up in 15 or 20 years could maybe be--last a little longer or something because they wouldn't have to put anything in them.

Thank you.

PRESIDING OFFICER AMSDEN: Thank you, Mr. Gatch.

Mr. Clyde Johns.

CLYDE JOHNS: No comment at this time.

PRESIDING OFFICER AMSDEN: Mr. Roy Johns.

ROY JOHNS: No comment.

PRESIDING OFFICER AMSDEN: O.K. That concludes the list of individuals who have indicated they wanted to make a statement. Would anyone else like to make a statement at this time? Yes, sir, please come forward and identify yourself.

HARRY WEBER: My name is Harry Weber. I live in Mitchell, Route 1. I am a member of the Scottsbluff County Planing and Zoning Commission.

I'm here this evening for listening

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particularly, but I was a little bit surprised to see the south side plan still as an alternative. I thought we had that taken care of in prior discussions. But in case the environmental people are not aware of this, we have this Commission in Scottsbluff County that has the responsibility of seeing about orderly development and it is our aim, of course, to do just that. It is not our purpose to solve one problem in one area and create another problem in another area in solving the first problem.

And as those that have spoken before me mentioning the hard clay situation on the south side, I want to add to that. If you care to go back in the records and make a thorough study of what happened in that area when the irrigation project first came in, you will find that the water table in the lower lying areas within this Creton Valley area, the water table has moved upward since the advent of irrigation which is a positive point of the water reaching these cracks in the structure below and running to these low-lying areas. And I would be very much concerned, as one of the Commission members, in contaminating the water within the area.

But my purpose here mainly tonight is to alert you to the fact that this Zoning Commission and Planing Commission has the responsibility of approving any such location site after much study pertaining to the area involved.

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And I would hope that you might correspond with this Commission so they could take a look at any proposal you may have.

Thank you very much.

PRESIDING OFFICER AMSDEN: Thank you very much, Mr. Weber.

Would anyone else like to make a statement? Yes.

ED NORUM: My name is Ed Norum. While I work for Lockwood, I don't represent them in any point of view. I am a resident of Gering and a taxpayer and interested in the ideas and the things that affect my town. To portray it any other way is not correct.

I just have some technical questions. The total retention concept is simply a liquid dump. It is not a recycling concept and should be seen that way. In the spirit of Public Law 92500, I'm a little surprised that EPA even seriously considers it as an alternative because it subverts at least the spirit of that law. And in that regard, I would like to see an indication of successful total retention systems. I'm sure there are some but in my travels I have heard no discussion amongst other consulting engineers or EPA people or have encountered any total retention system. Like I say, there may be some but I never hear even discussed as a serious alternative.

I just browsed quickly this document. If

I picked out the total cost for the land treatment--the irrigation system, rather, correctly, they came out at 50 to 60 cents a thousand gallons. The last reported cost they had at Muskogen was 22 cents. So I'd like some explanation of the difference.

The answer to ground water contamination as the technicians from Wapora probably know is what was done at Muskogen. You put in--the contaminated water stays on the surface of the ground water. You put in a drainage system to pick that up, again what was done at Muskogen, and then you convey that back to the river as they're doing at Muskogen, conveying it back to Lake Michigan. But in the meantime, you've taken off all of the nutrients or the bulk of them and all of the bacterial contamination and, in effect, gotten the irrigation and nutrient benefit out of the water. And if you're concerned about its affect on ground water, then you convey it through a drainage system back into the river. So then it becomes a recycling system but it goes back into the river as pure water.

I think that's all, thank you.

PRESIDING OFFICER AMSDEN: Thank you, Mr. Nourm.

Does anyone else have a statement they'd like to make? Yes, ma'am.

SUE CARLSON: My name is Sue Carlson and

I'm from the opposite side of the river, I'm from Scottsbluff. And I don't want you to think that because Mr. Eisele is the only one that has talked from the nort site that we're in favor of it. We're not.

In this little blue book, this force main, we live within a half a mile of it. That's about probably a 12 mile pipe there from town out to the site. How many 12 mile pipes do you know that never leak? Not only is our drinking water there but there's also Lake Alice. There's all these little creeks and I for one would not like to think that the effluent wastewater is going back into the lake or into the creeks. And I certainly wouldn't want to drink it.

There are a lot of people here from the north site tonight and I haven't heard anybody say anything but I do know that it is not something that we would like to see happen. And I have to agree with Mr. Gatch, if they want to get rid of their wastewater in town, fine, they can put it on their yards. There's a lot of empty lots where you can build ponds and hold it for the whole year. And I noticed in here that it said that odors was a secondary concern. Well, the lagoons really smell and I think it's a primary concern.

PRESIDING OFFICER AMSDEN: Thank you very much.

Would anyone else like to make a statement? Yes, sir.

AMOS CARLSON: My name is Amos Carlson. I live about seven miles north of Scottsbluff.

What's worrying me most on this project is this holding pond they're putting up there. Starting out with about a 300 acre holding pond. Now they're talking about 500 to 1000 acres. And they cannot put any water up in that holding pond for nine months of holding it there without seeping into our wells. It's just completely impossible. The irrigation system there when the water comes down in that ditch, in two weeks our wells start raising. That's how bad that's seeping in our wells.

So there's no way whatsoever that you can keep that sewage water out of our wells. And I know every farmer out in my district is waiting. And if they ever go out there, there's going to be a big lawsuit if this water ever pollutes our wells.

I've got statements in another book and they might get another statement from me later on, but that's all I have to say tonight. Thank you.

PRESIDING OFFICER AMSDEN: Thank you, sir.

The court reporter has reminded me that those of you who are making statements now are verbally

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giving your names but we don't have a spelling. Sir, could you spell your name for us?

MR. CARLSON: C-a-r-l-s-o-n.

PRESIDING OFFICER AMSDEN: And Mr. Weber, was that--

MR. WEBER: W-e-b-e-r.

PRESIDING OFFICER AMSDEN: Thank you. And Mr. Norum?

MR. NORUM: N-o-r-u-m.

PRESIDING OFFICER AMSDEN: And could you spell your name, please, ma'am?

MRS. CARLSON: C-a-r-l-s-o-n.

PRESIDING OFFICER AMSDEN: Thank you. Would anybody else like to make a statement? Yes, sir.

DALE STAMEN: Dale Stamen, S-t-a-m-e-n. I live out north of town.

In the first place, I question whether that land up there on the north side of the river can be broken up under the original contract it was sold under. I own part of that land under that Morrison contract.

And another thing, I'm on the Pathfinder Irrigation District Board, and we're having a real tough time getting our silt runs to continue because we have federal laws that we have to comply with. So I can't see--

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because they claim we're polluting the streams with natural rainwater, really, and I don't see as that's harmful whatsoever. But here we don't have any laws to protect our drinking water, our underground water. And this is what we're talking about tonight. It will affect all the underground water out there in our area. So I think we should consider that.

And another thing is when you go to construct the pipes out there, we as a Board insist that all the farmers put their pipelines over the drain ditches--not the drain ditches but the canals so they won't interfere with the operation and maintenance. And I think this is another thing that you have to consider.

Well, to sum it up, I'm just opposed to it, that's all there is to it.

PRESIDING OFFICER AMSDEN: Thank you, sir.

I understand that Mr. Ralph Flournoy with the Environmental Protection Agency would like to offer a few words here to maybe shed some light on some of the questions that some of you have raised at this time. That doesn't mean the rest of you can't make a statement in a few moments.

RALPH FLOURNOY: Before we go any further, I'm almost reluctant to get up here and try and answer all these questions at once. But I think we can clarify a few things. I understand the reasoning for some of your comments and I think they're appropriate. I think they were appropriate at the original hearing.

The gentleman over here was indicating he couldn't understand why the agriculture irrigation alternatives were not eliminated completely from the study. I understand why he's saying that but I think he has to understand, first of all, what the impact statement process is as Mr. Valero explained it. Basically, this process goes back and analyzes in detail and we like to think there's at least considerably more detail in this study than there was in the original consultant's study. I think so.

This study that you're reading tonight analyzes all of those alternatives. If because of cost or because of environmental considerations those alternatives fall out, that's the way it has to be. But we cannot reject those alternatives and simply not study them. That would not either conform with the processes the environmental statement is supposed to complete itself nor does it conform with EPA regulations.

As I indicated earlier, if you look on that cost ranking sheet, I think you'll see on a national perspective, which is the basis that EPA is going to be using for deciding in conjunction with EEC which alternative will be selected, I think you'll see that two of the agricultural irrigation alternatives come in dead last, one in the valley and one on the north site. I don't think it takes too much deduction to realize that those two alternatives are not going to be implemented unless the immediate seven or eight alternatives in front of it are eliminated also on the basis of cost or factors that we haven't included or on the basis of environmental considerations. And we happen to think that some of those alternatives that are listed above it happen to have some merit.

I'm not quite sure--I would assume that most of the people from Melbeta--excuse me if I mispronounce that--are mainly concerned with the south site irrigation alternative which, as I read it here, comes in--is No. 6. Which means there's five other alternatives that we would consider and screen before that alternative would be considered on just a system for Scottsbluff alone.

I think Mr. Eisele brought up a good point on the cost analysis for the north site. There was an error. However, it did not--there's another error in there which counteracts it so that the final cost figures do not change. And we're going to include that correction sheet.

As he mentioned, there was a mathematical error in which the salvage value was added rather than subtracted as was indicated on that page. If you make that

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correction, then the amortized capital cost is $579,083 which obviously reduces that particular cost. However, the O&M cost was added in incorrectly which means that the final cost per thousand gallons is 56.15 cents rather than 57.3 which really makes very little difference, very little significant difference in the cost.

I think the same applies if you totally ignore that O&M cost on that ditch. It really does not significantly affect that cost analysis, and certainly not enough to change its ranking, move it up to a very high point. But I wanted to make that clear. I think there was some confusion as to why we analyzed some of those agricultural alternatives. It was simply a fact we couldn't ignore those.

And then someone asked the question: Why didn't you study those in depth? We really wouldn't have much of an excuse.

I think some of your comments on possible contamination of ground water, wind erosion and so forth are very valid comments. And I think most of those are reflected in the study. I think those are of concern to our office at least and I think they're going to weigh heavily in the final decision. But we're going to have to eliminate a lot of alternatives on some other basis before we even get to those.

I would like to ask that the gentleman

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who made the comment regarding the affect on some of those canals and so forth, I'd appreciate it if you could put those comments in writing in some detail because I think those are going to reflect--are going to have to have some bearing when we actually get down to choosing a site for that complete retention alternative. We're going to have to take some of those comments into consideration. I think we realized when we saw that Wapora was first proposing that that obviously there was going to be some problems in implementing that solution.

As far as complete retention lagoons, the State of Nebraska has, shall we say, encouraged at least for small communities--certainly not the size of Scottsbluff maybe--but has encouraged complete retention for a number of reasons. First of all, since it doesn't have any effluent, that in effect, I suppose, protects the city from any future discharge requirements that might be imposed. At least that's the way a number of the smaller communities view it and I think rightly so.

So there are a large number of complete retention lagoons in the State of Nebraska. Most of them are small but they're there nonetheless. It depends on which consultant you talk to, I suppose, but I think some of the other states have such a design criteria that I think you could call some of their lagoons complete retention.

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In fact, I know of a number of them in Iowa and Kansas that are--if they weren't designed as such, that's the way they operate because they don't have a discharge. So this is nothing new. In fact, it's been around for some time.

I don't mean to try to answer all your questions here, I don't know as that's going to be possible. But in hopes of alaying some of the fears that some of the people who are particularly opposed to these agricultural solutions, I think that's reflected in the statement itself.

PRESIDING OFFICER AMSDEN: Would anyone else like to make a statement? Yes, sir.

HARRY KISTER: My name is Harry Kister and I live--I've got land neighboring where this lagoon would go. And I'm a neighbor of Mr. Eisele and I will make one statement that I think that should bear on this maybe to the City of Scottsbluff if nobody else. That if they pump water north out there, it'll merely be a pond out there. There will be no irrigation done by that because it is an impossibility for a person to pump water up the hill to this lake, back through a sprinkler at today's prices or any other prices on agriculture, to ever make this a paying proposition. Because we have sprinklers; we know what it costs to run them; we know what the sprinklers cost.

So it's an impossibility to pump water for the City of Scottsbluff, to think they could sell one

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drop of this water profitable. If they did--if a man did buy it, he'd go broke doing it anyway. He wouldn't have a chance to make this. And I think that the right way for this, if they want to put it up there, is merely to put it up there or put it in a pond. That's the only way it would work.

Thank you.

PRESIDING OFFICER AMSDEN: Could you spell your name, please, sir?

MR. KISTER: K-i-s-t-e-r.

PRESIDING OFFICER AMSDEN: Thank you. Would anyone else like to make a statement? Yes, ma'am.

MRS. HARVEY DUTTON: May I ask a question?

PRESIDING OFFICER AMSDEN: Yes, ma'am. We appear to be about out of statements. We'll take questions now from anyone that has a question, one at a time. And we'll begin--and would you identify yourself again, please, for the record.

MRS. HARVEY DUTTON: Dutton, Mrs. Harvey Dutton.

PRESIDING OFFICER AMSDEN: Thank you.

MRS. HARVEY DUTTON: Now can EPA honestly say that there is no potential health hazard related to wastewater irrigation? I want the truth. Can you say that?

PRESIDING OFFICER AMSDEN: Mr. Flournoy.

RALPH FLOURNOY: I don't think EPA would ever want to make that comment about any of the processes selected in that entire table. You know, when you're handling a substance like wastewater, you just don't make those statements no matter what.

MRS. DUTTON: Suppose you would go into this wastewater and you have created one or even say the total retention where that would seep through and into the-- and there's a good possibility at either site that that would seep into the underground water. Now you've created one; now what?

RALPH FLOURNOY: Well, I think first of all I'd like to differentiate between the phenomenon you're observing out there from the canal ditches from what would occur from the retention. And I speak at least from very small experience on other land application projects that we're designing or having designed in Schuyler, Nebraska. At least some of the same conditions we find there appear here as far as reasonably permeable soils and so forth. They don't have the problems that apparently are existing in Scottsbluff.

Those canal ditches, I think as the statement indicated, are completely unlined. And as I think it indicated, something like 60 percent of the water

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in those canal ditches is lost to seepage and evaporation and what have you. It's going to be at least a little bit different with some of these storage and retention ponds in that--I think it's reflected in the cost there for some of those sewage ponds, some of which approach a million dollars. A large part of that cost is, as we've seen on some of these other projects, is simply a line cost, to line the bottom of those lagoons with some kind of betonite (phonetic) clay sealer which is for the purpose of reducing the seepage rate to approximately the rates that you're seeing there which are considerably lower than the kind of seepage rates you're going to get out of a canal where there's really no precautions taken. They apparently aren't willing to, because of the cost, line those canals. They're willing to simply lose that water and just use what's remaining.

And it's not quite the same situation here. I think you also have to remember that given the material that we're going to be applying here and judging from the other projects I'm dealing with now, I'd guess we're talking about application rate of at least one and a half pounds of betonite per square foot and possibly more. The material that transfers through that betonite sealer is going to be considerably different than is in the contents of the lagoon simply because most of the material that will seep through--the only material that is going to get through is

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dissolved material, dissolved solids and nitrates, which would be of primary concern at least as far as what we've observed of other lagoons.

So those would be the two substances. I think someone else has mentioned that they're concerned about dissolved solids. In fact, that's one of the concerns as expressed in their statement about agricultural application, at the north site and some of the others, the fact that the seepage water could approach 6000 milligrams per liter of dissolved solids. And I think the general criteria which has been applied in the past for drinking water is more like 500. So obviously there's a problem with dissolved solids.

MRS. DUTTON: We're above the irrigation ditch. We don't have any seepage into our water. And the stream which comes from the west and under us, see they're below the irrigation ditch but we're not and that stream is not. And this is where we pick up our water, is through the fractured clay. Now in order to get that--I'm sure it comes from someplace else but that is a small stream there and we pick it up, the neighbors pick it up and then it goes on down.

Now where you have total retention though, isn't part of it to seep in, isn't that the idea of it?

RALPH FLOURNOY: Uh-huh.

MRS. DUTTON: But still that water is not all that clean, is it? I mean there are viruses that aren't killed with chlorination.

RALPH FLOURNOY: That depends entirely on the chlorination dosage.

MRS. DUTTON: And the deal about the chlorination into the drinking water, they're going to have to drop it down because of the reaction?

RALPH FLOURNOY: That's right.

MRS. DUTTON: And the cancer causing. Why are you putting that into my water?

RALPH FLOURNOY: I think your comment is valid there. I think there was one point where we had at least a small difference as far as when we first saw the draft impact statement. This recent concern over carcinogens has kind of forced us to pull back on chlorination on a lot of projects. And I think it was the recommendation or at least the feeling of some of our research people that chlorination would not be necessary. It was simply included as a cost element as a public health consideration. No matter what concern you voice about carcinogens, the primary concern still is the public health.

MRS. DUTTON: But then let's say that, O.K., that irrigation is a potential health hazard, right?

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You're not going to chlorinate that water and you're going to go ahead and sprinkle it out or seep it down. That's a potential health hazard, right?

RALPH FLOURNOY: I don't think there's any denying there's a potential.

MRS. DUTTON: Let me read you something and the title of this--and let's hope to heaven that the STAR-HERALD printed something correctly for a change. This is titled "The Court Upholds EPA on Leaded Gas Cuts." And it goes here and tells about "The U. S. Court of Appeals ruled five to four Friday that EPA can order reduction of lead in gasoline to head off potential but not fully proven public health hazards. The Court's attitude appeared to uphold EPA authority to regulate a broad range of environmental issues where danger to human health seems likely even though it has not been scientifically proven."

Now we can hold you to that ruling?

RALPH FLOURNOY: I'm not sure what you're quite getting at.

MRS. DUTTON: But it says EPA was assigned by Congress to prevent damage to public health and not to wait until the damage was done. What you're doing is putting all of that in there. We know it's going to do it. You know it's going to do it. O.K. Now let's stop it.

PRESIDING OFFICER AMSDEN: This is Mr.

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Peters with Wapora.

JERRY PETERS: The carcinogens and bacteria and viruses, first of all, the level of carcinogenic compounds that are formed when water is chlorinated, whether it's wastewater or whether it's drinking water, is dependent upon the class of organic freecurses (phonetic) organic molecules that react with the chlorine to form a class of compound that has been found in mice to be carcinogenic. Those compounds are formed in almost any water that is chlorinated for drinking water. And it has been found in every drinking water supply in the nation.

That doesn't mean it's good for you. But in terms of the relevant hazard involved in chlorinating and not chlorinating wastewater, it's Wapora's feeling that the added level of protection you can get from chlorinating these waters before irrigating is worthwhile. The chlorinated hydrocarbons that would be discharged in wastewater are volatile and they would not stay in the soil. They won't be band to the soil and therefore carried away.

Now in terms of bacterial and viral problem, there are none of these alternatives that include the sterilization of wastewater. There is no way that that can economically be done. And as long as we use water to carry our wastes, you're going to have contaminated wastewater. And the question is: How do you best and most appropriately dispose of it? The land irrigation concept has been in use for many years and has been very thoroughly studied at Penn State and other places in the country. It is one of the more effective ways of removing pathogens, including /bacteria and viruses, from the water we use to carry our wastes.

The point of difference that Ralph brought up I think bears on this. Wapora and the consultants that we use--we use other professionals, we don't make all our decisions ourselves because we're not experts--I'm not an expert in everything. We have a professor who is a recognized authority in both nitrate contamination and in pathogen removal and he feels the secondary treatment with chlorination of wastes before land application effectively removes the hazard.

The alternative to putting the chlorinated waste on the land and using the land as a filter for the pathogens and also for some of the nutrients is to either put them in a lagoon--a liquid dump, I think, was a pretty good way to describe it. Mr. Norum, I thank you for that one, or to discharge it to the North Platte River. Now in terms of health hazards, it's my feeling that chlorinated wastewaters applied to land are less of a hazard than discharge of the waste to the North Platte River which passes through the farms of, I imagine, almost everybody here.

They work in those fields.

No one is complaining about the discharge of unchlorinated wastes to the North Platte River and the fact it's going onto irrigated land. I'm not complaining because I don't think it's that big of a health hazard.

MRS. HARVEY DUTTON: Something else you said, about the nitrogen. I remember reading--EPA had a list of towns in Nebraska that had nitrogen in their water and what a health hazard that is. Well again, all this water, this is supposed to be the big thing about sewer water, all your nitrogen. O.K., you're putting that down below too. It's not going to filter out. And I believe somewhere in all this mess I've got--this man is supposed to be an expert on this--that says this type of irrigation is good for the sand hills and it said Nebraska. It says Kansas and I think they even said Oklahoma. But this is not sand hill country, your sand hills are clear on north.

This is just plain old clay just like Scottsbluff monument out here. You take a good look at that and you'll see it's just layered hard stuff. And water goes down between it and at times a big chunk of it slips off for the very reason that it just will not do it.

But that nitrogen, that's something else that EPA says that's a hazard in water or any kind. All

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right. And I also know that chlorination won't kill a lot of the viruses. There are certain parasitic eggs that go through. And they also said because of this fractured clay, a lot of that filtering that's necessary won't go through because it'll bypass it going through the fractured clay. And we don't have all that much topsoil in most places out there that will make any difference. It's going to go down through that.

And the same with the north. You take a look at that. That's a rocky mess up there.

JERRY PETERS: We pointed that out in the EIS. It's in there if you read it.

MRS. DUTTON: But I just--to me, you are creating a potential health hazard because that water--that's not just my drinking water or the neighbors' drinking water that runs on. It's the first thing you learn in the history of Nebraska, that Nebraska has one of the greatest underground streams. So it's not just my water that will eventually be contaminated, it's this guy's, it's the guys in the future, because once that's done there's no way you can ever undo it.

PRESIDING OFFICER AMSDEN: Mr. Flournoy, do you want to respond to that in any way?

RALPH FLOURNOY: I'm not sure that there is any way to respond to that in any detail. I think the statement goes into some detail about nitrates. The main concern with nitrates, EPA generally requires that the nitrates be less than ten milligrams per liter. All the samples we've taken at least near the existing lagoons and so forth, which I would guess we've got noticeable seepage--any lagoon has some seepage--we found that all those samples are well within that ten milligrams per liter. I don't think that there's any doubt that the nitrate levels here are higher than some of the other places where we're sampled ground water during the course of our study. I think some of them have approached six milligrams per liter. But there you're talking about a situation with a lagoon and a bottom and the ground water are in contact at times. So there's very little action by the soil in some of those existing lagoons, particularly during seasonal peak flows in the Platte River when the ground water comes up.

And we've also sampled some wells near the existing Scottsbluff lagoon for fecalchloroforms is an indicator of bacterial contamination. And at least on the two wells immediately adjacent, in fact, one of the wells was between two cells, 5 and 6, they didn't find any fecal-chloroforms at all. That's about the only data we've got so far but I think it at least suggests that the problem with bacterial contamination and nitrates is perhaps not--at least as great as we had feared or anticipated as we've built some

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of these lagoons over the years.

But I think there's still a certain amount of work that needs to be done to verify just what those influences are. But I don't think there's any doubt but that your comments about the nitrates reaching wells in that area is not a valid point.

MRS. DUTTON: Just how bad is Scottsbluff and Gering? Well, Terrytown, once in a while you can smell it. But Scottsbluff and Gering together, just how bad is their pollutant into the river right now?

RALPH FLOURNOY: That's hard to say, partly because there's a certain amount of fluctuation in the loads. Now that the Swift plant is no longer operating in Gering, their treatment plant is turning out a much better effluent than it was because that's a substantial load, to say the least. So they're achieving a much higher reduction there.

I think there's some improvement that can be made in the operation of both of those lagoons to lower it slightly but I don't--at least given the monitoring data that I've seen, the effluent from both of those lagoons is in excess of what the permit requires but I don't think, as EIS indicated, that there's a major water quality problem because of those discharges.

If anything, the problems I see come from as best I can tell from the information available in this statement, comes from other sources. Most of the dissolved solids problems is not caused by the lagoons. It's a very small portion of the increase that we observed between the two monitoring stations that are referred to, the two USGS monitoring stations.

And I think it's the same thing with nitrates that we're observing in the ground water. Most of those nitrates are not coming, at least I feel, from the lagoons. Most of those are coming from irrigation return waters and the like. That's the primary source of nitrates.

There's just no way to compare the amount of sewage we're treating on a yearly basis with the huge volumes of irrigation water, some of which are perculating through farmed areas on the river on north and from the river south. The volumes and the quantities of nitrogen just don't--there's a very small ratio there.

MRS. DUTTON: They say all this stuff, you're going to leach--well, let's go back. You have how many acres, 2500 and some acres, I believe, is what they wanted in Creton Valley. Now that just about wipes us out, to be right truthful. But you've got to leach that soil to push that stuff back through. What are you going to do for leach? You can't use the same water, can you?

RALPH FLOURNOY: I think what you're

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talking about there is how much you would have to apply at any given, say, week or day or so forth. I think that was the point that Mr. Eisele brought up in a letter that he sent to us, and I think it was a valid point. At least he wanted to know why we did not consider raising alfalfa at the north site? We did. The leaching rate to make that work was in excess of what we could come up with. There's no way we could apply that much water. We didn't feel, at least based on the research that's been done--and I don't really pretend to know that much about that aspect. But the figures would indicate there that we don't see any way to make it work with alfalfa. Obviously, that would have been nice because it certainly makes the cost effective analysis work somewhat better.

But, yeah, there's going to have to be leaching, not only for the reasons you say but to keep the amount of dissolved solids in the soil at some kind of acceptable level so that the crop doesn't get stunted.

MR. DUTTON: But you'd have to use different water than what you're putting on, right? Wouldn't you have to use a cleaner water to leach that down through other than what you're putting it on?

RALPH FLOURNOY: Well, what you have to do is apply, say, a higher amount at some point. Yeah, there's a possibility. I think it's mentioned in there,

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that there might have to be water pumped out of those canals if those dissolved solids reached a high enough level. There might have to be some supplemental irrigation water applied to some of those solids. And I think that again is at least something that makes the south irrigation site that much less attractive.

MRS. DUTTON: Somewhere I read that they were either going to use--a possibility, not definite, not anything, just something either out of the river or out of the Gering irrigation. They called it Gering-Mitchell Canal. I didn't know they called it that down there, but that's all right. That water is allotted to us from Wyoming. And the minute somebody else comes in and says, "We're going to use this;" we're shorted on irrigation water as it is.

RALPH FLOURNOY: Yeah. I think that was indicated in there only for--as an indication of what might have to be done. And as an indication of a problem that could result.

MRS. DUTTON: Sometimes we don't have enough water out there.

PRESIDING OFFICER AMSDEN: I think maybe we should break this at this point and see if we have any other questions so that we don't-- Yes, sir.

JOHN MC LELLEN: I have one question while you're all here. I'm John McLellen from Gering, Mayor.

After you folks take all of this data back and process it and put it through your final study, what are you going to come up with as a means for evaluating what the most desirable project for Gering, Scottsbluff or the regional type system is going to be?

Secondly, we've got to come up with the 12 and a half percent to pay for the local funding of this. What kind of a time table can we expect to get those things implemented? Nowhere have we been able to get a clear answer on those two questions.

RALPH FLOURNOY: I'm not sure I can give you that great of an answer. The only date I'm certain of is the April 10th date that he's given you for end of the comment period.

The final EIS has to be drafted and issued. I don't know if there is a specified time allotted for the consultant to do that, to incorporate the comments that we received here tonight and revise what needs to be revised. But I think there's obviously going to have to be some work by the city to at least tidy up a few ends, loose ends that are going to remain after the EIS, so that we can complete this planning process.

But I would guess that given the fact that we can't act for 30 days after the final EIS draft, I would guess we're talking about June anyway before this EIS thing is completed. At that point, I don't think there would be that much time involved, hopefully, in completing the remaining work. Most of it's a matter of getting maybe a few clearances and so forth. I think it depends to a great extent on which alternative is chosen. Obviously, if we choose the complete retention or something like that, there is a specific site yet to be chosen.

We purposely didn't choose a site in that area so we could leave ourselves reasonably open and to also, since we're still a few months from completing it, we didn't want to encourage any, shall we say, speculative tendencies to encourage the value of that land to change. I think it has been indicated here tonight the cost to acquire that land may have been low. I think that's one of the difficulties we're having is trying to pin down the value of some of this land. It's considerably higher than what we would have expected on, I think, most of the projects.

RICHARD EVERETT: Did you have an estimated acreage for the retention area?

RALPH FLOURNOY: The complete retention? Yes, there's a table in here which lists--what it gives is the amount of surface water acreage. To that you'd have to add a certain amount of area for the dikes and access roads and what have you.

RICHARD EVERETT: Page 184.

RALPH FLOURNOY: Page 184. It gives it for two different percolation rates, the one-eighth inch per day and with essentially no percolation. And the state has been indicating in the past that their requirements for a design of these complete retention would use one-eighth of an inch per day. So the figures in that column would probably be the ones we'd be looking at in terms of design.

TOM SCRIPTNER: My name is Tom Scriptner. Now on that valley complete retention area, isn't that in the floor plain completely?

RALPH FLOURNOY: No. I think if you look at the map, you'll see that for the intermediate flood, I think it's up near the front too, you'll see that the-- for better or for worse, the existing Gering lagoon divert the flood or shall we say squeeze the flood plain inward a little bit so that that particular area that's circled there is at least intended to lie completely outside of the flood plain. And any site we chose would have to be outside of the flood plain under executive order that was issued last May. At least we would have to give strong consideration to sites outside of the flood plain. We wouldn't have any choice almost.

TOM SCRIPTNER: Do you know how far north of Highway 26 the flood plain goes? I mean that's all level in there. It has to go north far enough to get out of that flood plain and this map does not indicate it. It looks like it's running south of Highway 26.

JERRY PETERS: You're looking on Page 62?

TOM SCRIPTNER: This does not really tell you anything. It stops right at the present disposal plant and this valley retention is on east of that. And I can't hardly believe that the area they're looking at there is not in the flood plain, the 100 year flood plain, because that area is lower than the area that the present treatment plant is. And I can't--according to the map, and I know you didn't specify the exact location, but that would just about have to be pretty far north of Highway 26 to be out of the flood plain. And I wonder why you're considering on spending a lot of time and money in looking at a plan that's not in the 100 year flood plain.

RALPH FLOURNOY: I think if you translate--if you go back from Page 62 and go back to Page 4 as to where the area is specified, I think at least a good portion of that area is outside of the flood plain. I wouldn't deny that at least the way it's drawn a small portion of it might actually fall within the flood plain. I think any site we would consider, we would definitely prefer that it be outside entirely, particulary because the existing Scottsbluff lagoons are, shall we say, a noticeable

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obstruction to a flood flow, as you can see from my map on Page 62.

PRESIDING OFFICER AMSDEN: Mr. Peters, has the flood plain been mapped?

JERRY PETERS: Yes. What I have here are some pages taken from the Corps of Engineers flood plain study. The end of the study is right here, the end of the Scottsbluff lagoon is right here. We don't have flood plain information downstream from there. However, if you look at Route 26 going out here and if you look at the course of the river, the river is going away from Route 26 there at least for a ways.

TOM SCRIPTNER: Is the dark blue the flood plain, is that what you're saying?

JERRY PETERS: The dark blue you see up here are the limits of the maximum flood the Corps of Engineers thinks would ever happen. The area within that dark blue is what is called the 100 year flood plain. Our complete retention area we looked at is up here between Route 26 and this low-lying area, with saline soil. There is a low ridge that is not saline because it's high enough above the ground so there is a barrier, topographical barrier.

TOM SCRIPTNER: I could not tell from your maps what you were looking at as the flood plain.

JERRY PETERS: We could not put the whole

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thing in the study but I don't think there's anything to worry about.

RALPH FLOURNOY: I wanted to answer at least the gentleman from Gering's comment about the local cost. We try on every project, not just this one, to consider the local cost particularly as far as what it's going to mean an average residential user, and I think those costs are included in here. We're not necessarily going to take the solution that's cheapest for EPA. We're going to try and consider local costs. We always do.

I think frankly we'd have to admit that we start with the cheapest solution and kind of work our way down the list.

ED NORUM: I want to ask a question. Ed Norum. What is the life of the retention pond? Now you indicated treatment and some exchange capacity so it has ability to hold various of the chemical constituents that would seep through it. Since you are currently designing for an eighth of an inch, at some point you've reached the saturation stage. Have you attempted to predict that, and if so, how many years of life does the retention pond have?

RALPH FLOURNOY: O.K. I think I maybe should clarify why the state has chosen to use the eighth of an inch per day. Generally, it's felt that from a practical standpoint, once you apply that sealer, about the best you

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can hope for until you get some water in there and get it operating is probably somewhere near a quarter of an inch at the very beginning. But once the betonite seals and swells up and it's usually a special mixture that swells so that we're reasonably certain to get the sealing action we're looking for, then we assume that over the initial period of operation that that's going to decrease. You know, we're going to get material settling out and that's obviously going to decrease. And that's why we design it for an eighth of an inch which, in effect, makes the lagoons twice as big as we might have ordinarily considered if we were using the fourth of an inch we think we can achieve initially.

So the eighth of an inch is really about as conservative a factor as we think should be used. And, in fact, it may be--given the soils that are prevalent here, it may be too conservative a factor. In other words, we could possibly reduce the size of those lagoons if we felt the environmental factors could be taken into account. So I think at least it's been our experience that that's a very conservative consideration, using an eighth of an inch.

But as far as the life of the lagoons, when we talk about a 20 year design period, that doesn't necessarily infer that they're simply good for 20 years and then we tear them down and build something else. If they're properly maintained and the erosion potential is dealt with particularly on the outside of the dikes and protection on the inside for wind erosion, particularly on lagoons of this size where we can have fairly large cells, I think these lagoons can last for considerably longer than 20 years. In 20 years we might have to add onto them if we exceed the population growth that's projected or if there's a noticeable increase in industrial contributions, if we get some more meat packers or whatever that contribute.

So I think there have been lagoons that have been in operation 30, 40, 50 years. It simply means that we feel that if projections go as anticipated that at the end of 20 years the lagoons would probably be slightly overloaded and we might have to make an addition. I think all the projects we have are basically designed for a 20 year growth. It doesn't mean necessarily a 20 year life.

PRESIDING OFFICER AMSDEN: Yes, sir.

WALT HELSER: My name is Walt Helser from the north area. Could you give me an exact location of your Sioux County pond?

RALPH FLOURNOY: Of which one?

WALT HELSER: The Sioux County pond for this irrigation on the north site. Could you give me the exact location of your so-called pond, retention pond?

RALPH FLOURNOY: I can't quote you a section number. I think we've got it somewhere in the files.

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But I think it's indicated on the drawing that indicates that particular alternative.

WALT HELSER: If it's the drawing in this book, it's not accurate.

JERRY PETERS: It's not shown on there. I could tell you where it would have to go. It would have to go at the lowest part of the site. You want to use that pond to collect your run-off as well as to store your water before you spray it on the land. You don't want to put it up on the hillside.

WALT HELSER: That's not a very good answer, is it?

JERRY PETERS: The system has not had final design. No, sir, I can't show you where the lagoon will be. We're looking at alternatives, not the final approved action. Before the thing is built there is another entire phase of this construction process that has to be done which includes design of facilities.

WALT HELSER: In other words, nobody has gone up there and pointed their finger at the spot yet?

JERRY PETERS: That's not necessary yet.

WALT HELSER: Well, it doesn't make sense to me then. You're talking about a north site here, the place to put your pond, but you haven't even been up there to look at it?

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JERRY PETERS: I've been on the site.

WALT HELSER: You've been on the site?

JERRY PETERS: Certainly.

WALT HELSER: I've not been contacted.

JERRY PETERS: I drove up a little road right to where the gate is.

WALT HELSER: To the gate?

JERRY PETERS: Right near a well. There was a well with cows around it. There's a gate about 200 feet from it.

WALT HELSER: I think you're mistaken. I don't believe you've been there. I haven't been contacted. Nobody has asked me to go in there.

JERRY PETERS: We've not gone on your land, sir, we've gone over to it and seen it, seen the vegetation. We know as much about it as we can tell by looking at it.

WALT HELSER: Do you know what the cows looked like?

JERRY PETERS: I've got cows pegged.

PRESIDING OFFICER AMSDEN: Mr. Gatch.

RICHARD GATCH: I'm Richard Gatch again. If one of these proposals goes through and people don't want to sell their land, do you plan to take it by imminent domain?

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RALPH FLOURNOY: It wouldn't be up to EPA to take it. It'd be up to the city.

RICHARD GATCH: Would the city take it by imminent domain?

RALPH FLOURNOY: I'm not sure I can really answer that for the city. I don't know whether they would be willing to condemn the land. That's certainly a power they have.

RICHARD GATCH: It is a power that they have?

RALPH FLOURNOY: As far as I understand, within their zoning authority.

RICHARD GATCH: So that means that in the United States where we have all of our rights and everything that the city, if they feel that they need to get rid of their--

PRESIDING OFFICER AMSDEN: Yes, sir. Imminent domain is an authority that is exercised by most governments with some jurisdictional capacity, and it's necessary for us to build a highway or put in a railroad or the Corps of Engineers exercises it everytime they build a retention facility of any kind. And it's utilized by cities generally for all the public works that they need to carry on.

There are city people here and I'm sure

they can correct me if I'm wrong, but imminent domain is an authority that's exercised by municipalities and by the federal government only as a last recourse. It's not something that anybody wants to exercise in any way. And generally there's a long process of arms' length negotiations that occurs long before any imminent domain proceedings are initiated.

RICHARD GATCH: How far out can the cities go?

PRESIDING OFFICER AMSDEN: They can't go beyond their jurisdictional boundaries, I don't believe. There may be somebody here that can correct me on that but I think that's accurate.

RICHARD GATCH: Do you know what Scottsbluff and Gering's boundaries are, jurisdictional boundaries are?

PRESIDING OFFICER AMSDEN: No, I don't.

JOHN MC LELLEN: I would say it would be a two mile zoning radius.

WALT HELSER: How can they go to Sioux County then?

MRS. HARVEY DUTTON: How can they go to Creton Valley?

RALPH FLOURNOY: We didn't say they had the sites yet. It's simply indicated as an alternative.

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Every project I've ever had we didn't have the land in most cases. We simply indicated this as a possibility, you know. I don't know of any city that own so much land that every alternative that was considered they own the particular site. If we limited ourselves that much, to that extent, I doubt if we could ever come up with alternatives that would work on most of the projects. We have to think a little bit broader than that I think.

MRS. WALDO DUTTON: Have you ever considered putting the lagoons where the lagoons are now?

RALPH FLOURNOY: That alternative is considered in there. In fact, there are two or three alternatives which consider upgrading the existing lagoons on both Gering and Scottsbluff and on a regional basis, which we would basically use the land that's either there or immediately adjacent to the existing lagoon. I think most of those alternatives are labeled S.I.D. and then 1, 2, 3, 4, whatever the case might be. Most of those involve a discharge to the Platte River.

Some of those came out reasonably cost effective. In fact, the one most cost effective solution for Scottsbluff is one of those very solutions in which the industries would be asked to provide a considerable amount of pretreatment amounting to something like 90 percent reduction of their loads. And then there would be a fairly small upgrade of the existing Scottsbluff lagoons, to convert one of them to an aerated cell in which we would hope to get a much better reduction than we do now and in which we would have a dissolved air flotation which we would hope to remove some of the remaining material that was in the final effluent cells before it went to the river so that we would have a fairly clean product.

So there was, I think, something like four alternatives for Scottsbluff that involved some stream discharge. I think three of those involved an upgrade of the existing lagoons. One of those involved completely eliminating an existing lagoon and putting in a mechanical plant at the existing Scottsbluff lagoon site or somewhere near there. Unfortunately, that alternative, because of the existing investment the city has already in their lagoons, did not come out too favorable. We'd essentially be starting from scratch on that particular project. We'd be starting with a brand new plant.

MR. GILBERT: Well, I understand ten years ago that Scottsbluff put in this lagoon system and they had that alternative also of going to mechanical processing of their sewage. Why didn't they look further ahead and put in --if they see that this lagoon system wouldn't last them, why didn't they go ahead at that time and take the other mechanical disposal?

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RALPH FLOURNOY: Only the city can answer that. I don't even believe we were involved in that project at all. You know, I can't tell you why the cities do what they do. You know, that's their responsibility and their decision.

WALT HELSER: Walt Helser again. We was up there this summer. Somebody called us and told us our cattle were out on the highway and we went up there. They weren't ours but there was grassland to the north of us, oh, about a half a mile north of us and there had been a big rainstorm up in there and that water come down through his pasture and took out the fence and went under Highway 71 and water all wound up down in the PID canal. Now would you call that a flood area up there? What if that water from this treatment, wouldn't that reach the PID canal?

RALPH FLOURNOY: I think that it would be our hope that it wouldn't. I'd be the first to admit that--

WALT HELSER: Can you tell by sitting out at the highway by the gate what's going to happen up there?

RALPH FLOURNOY: Well, I think what you're still talking about is a final design. And we're talking about expending quite a bit of money to go up there and survey that site and run a topo.

WALT HELSER: We're quite concerned about

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that final design.

RALPH FLOURNOY: Well, I don't blame you. I think, as I've indicated before, the chances of your particular site being chosen at this point are not that great. You're next to last or last, I forget which.

MRS. HARVEY DUTTON: Mrs. Harvey Dutton again. What was wrong with the dissolved air flotation system? Isn't that similar to what Denver has? Denver has a huge tank and I know they take the sludge off of it and they dry it out on unused ground at Lowry.

RALPH FLOURNOY: Well, it's the same process, dissolved air flotation, no doubt about it, but we're talking about applying the process to something that we really don't have at least that much experience yet. It's been tried but not in that many cases. There's dissolved air flotation of sludges all across the country and there's a lot of data so the people know what they can expect. And they've got some design criteria to go by.

MRS. HARVEY DUTTON: General Motors and Gulf Oil that shows their sewer system all cleaned up and they've got a pretty little goldfish floating in there.

RALPH FLOURNOY: Well, I don't know anything about GM's process so--

MRS. HARVEY DUTTON: Well, I think both of them have a big ad on TV that shows that they're really

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ecologically minded, you know.

RALPH FLOURNOY: So is Union Carbide. But I don't know that much more about their process either.

MRS. HARVEY DUTTON: It looks just like that, like what Mr. Wells was explaining to us on sludge and I remember Denver as being--

RALPH FLOURNOY: Well, we're still talking about trying to air float material that we're now accustomed to dealing with. We're basically trying to remove some of the remaining algae. Whether this process will work on algae we're not quite as certain as we would be if we were designing a dissolved air flotation for sludge.

MRS. HARVEY DUTTON: Hasn't Denver's been in operation for quite a while?

RALPH FLOURNOY: But they're not--I don't believe they're air floating effluents from a lagoon, they're air floating sludge and there's a difference.

MRS. HARVEY DUTTON: They've got a lagoon out west of town that's called Bar Lake, Bear Lake, something like that.

RALPH FLOURNOY: I couldn't say.

MRS. HARVEY DUTTON: I know they take that sludge out and they sell it.

RALPH FLOURNOY: I don't know anything about that particular lagoon.

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PRESIDING OFFICER AMSDEN: Any other questions?

WALT HELSER: On this retention pond, where are you going to hold the water level, constant water level or will it be higher in the wintertime and lower in the summertime and will this betonite lining that you're going to line it with, will it wind erode? Like if you've got a fall in the water line in the summertime and we get a wind storm, would this betonite leave because we get a wind? And if that leaves and the water comes back, will it seep through?

RALPH FLOURNOY: Well, if we were talking about some of the storage ponds, there would be fluctuations in some of those obviously because we're storing for winter and then disposing of it or at least draining it down during the summer. However, in the complete retention, once they've been in operation for a while you're not talking about the fluctuation that you would in a holding pond where you might have a two or three foot difference between the end of summer and winter. However, in a complete retention, we're only talking about the differences that would develop during the summer from evaporation. You know, it depends on the particular summer, how hot it is and what the moisture--how much rain we get. But, you know, we're talking about maybe a foot variation under those conditions.

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WALT HELSER: I'm talking about a holding pond for irrigation. You're going to have to fill that in the wintertime or there will be no irrigation. Then you're going to pump that water out and that drops the water line.

RALPH FLOURNOY: Yeah, we'd be dropping it from say a five foot level, hopefully to somewhere near a two foot level maybe.

WALT HELSER: So that would give that a chance to erode and leave.

RALPH FLOURNOY: Well, there's obviously going to be less potential for erosion at the low spot because we're got those dikes that are going to be built with a two foot, three foot free board (phonetic), so there's not going to be that much wind erosion when it's at the low filling spot. And when it's at its full, say five, five and a half, whatever it amounts to its highest level in those holding ponds, that's when the main erosion potential is going to be there. And most of the cost analysis include at least some cost for riprapping or some kind of measure for protecting those dikes, particularly on the inside, because they're going to be big enough that I think there's at least a good potential for some erosion of those dikes.

MR. GILBERT: Wouldn't the betonite crack when it's not covered with water?

RALPH FLOURNOY: Well, yeah, in most of

the lagoons, you know, the betonite is applied to cells that we may not even be using. But once the water goes in there, the betonite basically will start swelling up again and you'll have essentially the same sealing capabilities as you would have originally.

MR. GILBERT: I've used betonite in a storage tank for cattle watering and it don't hold all the time, it leaks. You've got to rebetonite every year.

RALPH FLOURNOY: Well, I haven't seen any indication that the fact that this water level is going to fluctuate is really going to affect the sealing properties of the lagoon. Basically, when you look at from the variation from five foot to two foot, you're not really decreasing the water surface area that much so you're not really affecting a large surface area of betonite. And if that would have to be resealed, why that's always a possibility. But I haven't seen any instances that I'm aware of where we've had to do that. Now this is pretty standard procedure to seal these lagoons. At least I'm unaware of any problem in that regard yet.

RICHARD EVERETT: Do you have an acreage for the north valley irrigation area?

RALPH FLOURNOY: For the storage pond or the--

RICHARD EVERETT: It does not show how

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many acres yet on the map. Up here it's 1500 and over here it's 1200. But you don't show anything for the valley area, north valley area irrigation.

PRESIDING OFFICER AMSDEN: Mr. Peters, do you know?

JERRY PETERS: We specifically did not indicate sites for these new sites we looked at for the EIS because we would have the same problem, I believe, as has been seen previously for the north and south sites. We were simply looking at what affect the distance, transport distance in elevation, different sites had on the cost effectiveness of alternatives. And we then pick areas which follow certain criteria which would be necessary for different types of disposal. There was no attempt to look at land parcels that would be available or anything like this. We were looking at general environment concerns cost effectiveness.

RALPH FLOURNOY: But I think the acreage was given.

JERRY PETERS: The acreage for all the alternatives, there's different tables but it is presented.

RALPH FLOURNOY: Were you looking for the total acreage?

RICHARD EVERETT: Yes.

RALPH FLOURNOY: I tried to memorize all

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these tables but there were too many.

PRESIDING OFFICER AMSDEN: Mr. Peters, do you have any idea of what the number of acres would be in that area?

JERRY PETERS: The valley complete retention areas?

PRESIDING OFFICER AMSDEN: Yes--no, the irrigation site, is that correct?

JERRY PETERS: It depends on how many cities are contributing to it.

PRESIDING OFFICER AMSDEN: Are there any other questions? Yes, sir, Mr. Eisele?

WAYNE EISELE: I'm not clear on why so many other projects are growing alfalfa and it cannot be grown in this here.

JERRY PETERS: The reason for that is the total dissolved solids concentration in the water supply for the cities.

WAYNE EISELE: Is the water here so much different than other cities?

JERRY PETERS: Yes, it is. The recommended standards for total dissolved solids in drinking water, the federal standards, are 500 parts per million. Your wells here average 700 parts per million. By the time it's gone through your homes and picked up all the wastes,

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gone through lagoons and been evaporated some, it's up to I think 12 or 1300 parts per million. By the time it sits in the storage lagoon for seven months, it's up to I think 1800 parts per million. So that's getting kind of tight.

Those crops that are self-tolerant can be grown using wastewater with that high of PBS level. Corn, sugar beets and a few others can tolerate it. But in order for them to tolerate it, you'd have to have a high rate of application.

PRESIDING OFFICER AMSDEN: Any other questions? Yes, sir.

A VOICE: What happens now? You go back and you put this together along with all the input that you get tonight and then you come up with what you consider will be a final one for the cities, is this right?

PRESIDING OFFICER AMSDEN: Mr. Valero, would you address the process from here on?

DAN VALERO: Well, this is a very important part of the process tonight. Plus, like I said before, the comments that you felt you couldn't make now that you'd want to make in writing or the ones that you want to make in writing anyway. O.K. We take those comments and then with Wapora and whoever else, other agencies and so forth, because they're going to be commenting too. You're not the only ones commenting on this. We're going to have the Department of Interior, the Department of Agriculture and everybody, you know, different state agencies and local agencies.

Then we're going to has that out with our consultant ourselves and them and you. We may give you a call, you know, if you've said something that really needs further concurrence, we may want to talk to you. If that takes two months, fine. If it takes six months, we've got to do it because we're required by law to do it, you know. Drafts have turned in the finals after a couple of months and other ones it's taken years. Some never turned in the finals. I guess the projects ultimately are shucked.

But what we're going to do is make the most use of this as possible. Then we talked about the 30 day period. Well, after that, after we get all your input, after we get the input from all the different agencies and organizations and everybody else and we feel that we can put out a final, we will. We'll publish it and send it to our Washington headquarters and then you get to scrutinize it for 30 days and you'll have a chance to see whether we responded to your comments the way you wanted us to. So that's really what we do with what we're going to have tonight.

A VOICE: What happens if like this groundwater that you're talking about out here, this ground-

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water that the city would buy or whatever and nobody sells it?

DAN VALERO: That's going to be a part of our selection process.

A VOICE: There is no availability, I'm pretty sure of that.

DAN VALERO: O.K. You know, the cost effectiveness, availability, legal problems, those are all things that are considered in the EIS. I think that's something that really wasn't brought out tonight. The EIS is not a facility plan. It's a document, the multi-disciplinary decision making document, and we really don't have--we really don't have a proposed action in this case that we can really call this a decision making document and that's what we're going to do with it. If we can't make the decision based on something legal or something economic or something engineering-wise, we'll just have to throw that alternative out.

MRS. DUTTON: Mrs. Dutton again. Do you mean that what is put in the EIS is what you more or less base your judgment on even though there are errors in the statements?

DAN VALERO: No, that's exactly what I don't mean. I mean that we--there were errors--

MRS. DUTTON: There sure were.

DON VALERO: --and tonight we found more than we knew we had.

PRESIDING OFFICER AMSDEN: This is a draft EIS, not a final.

DON VALERO: And then we'll take what you said tonight and we'll see what was wrong with the draft and we'll see what was right with the draft and we'll look at all the alternatives based on what you said tonight and based on what everybody has said during the comment periods, and we'll throw out certain alternatives.

MRS. DUTTON: Why would the Department of Interior be brought in?

DON VALERO: Well, maybe it's not relevant in too many ways to this project. But we have to send it to the agencies on every level that we feel are qualified or have some type of interest in this project that they may help us make the decision. Plus, they send to us their EIS's as we exchange ideas with them. And I guess the best way to put it is that we send it to any agency that we think might have an interest in it and that includes DOI.

PRESIDING OFFICER AMSDEN: I think we specifically have to send to Interior by regulation. And the reason we do is because they have the special expertise in the area of fish and wildlife, particular special expertise. And I'm sure it's sent to the state fish and wildlife agency as well.

MRS. DUTTON: You know, in all of that book there was only one mention that the human element was ever even concerned. Everything was archelogical, animal life, anything but whether or not the human element was concerned. It was everything else but.

PRESIDING OFFICER AMSDEN: That's right. It's a little bit harder and that's why these particular hearings are very important. It's a little bit harder to get a grasp on cultural, social--cultural and social impacts of a proposed project. It's a much harder thing to grasp than it is to say what's going to be the impact on a particular piece of land in terms of the flora and fauna. So these hearings are very important for just this reason.

MRS. DUTTON: And the state Game and Fish, Parks Commission would be brought in also?

DON VALERO: Sure. Well, we sent out approximately 200 copies. We still have some available. But we mailed it to anybody that we thought might help us in making a decision. And like Tim said, we have a legal responsibility to send it to them. I didn't want to say that we had a legal responsibility to send it to DOI because I'm sure there's some cases where they may give us just a response of, "Well, this isn't really relevant to us."

But in our regulations and our final

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regulations for preparing environmental impact statements, we have a list of relevant agencies in the back. We can add to that list if we want. If we think that, for example, you said the Game and Fish, yeah, we would send it to them. Or we'd send it to the different state agencies. We send it to some historical societies. And it goes through the A-95 process. You know, we send two copies to the state A-95 agency and to the local, such as Panhandle A-95 agency.

MRS. DUTTON: What's that?

MR. VALERO: A-95, do you want to know what A-95 is? A-95 is named after the circular A-95 by the Office of Management and Budget. What it does, it's a decision making process by a regional agency to make sure that all federal projects meet the planning objectives of the region, not just local objectives. For example, if a highway comes in, you have an A-95 process for that or if any federal funds at all.

PRESIDING OFFICER AMSDEN: It's a clearing house function. It's a function for gathering input from other agencies, circulating and gathering input from other agencies and then transmitting to EPA.

MRS. DUTTON: Is the economical factor included in all of this study?

PRESIDING OFFICER AMSDEN: Yes.

MRS. DUTTON: The economical impact on

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Melbeta? I couldn't quite figure out when he was talking of one percent loss of revenue--was this the whole county the way they had it figured or our area. But if you take the 2550 acres, that's an awful impact to our small area. Like I said, it wipes out the valley.

DAN VALERO: I'd have to say yes, economics are important. It's just as--well, environmental aspects are important; economic aspects are important; legal aspects are important. And if you feel we didn't cover the economics correctly for Melbeta, that's what we're here for and that's why I invite you to write us a letter and we'll check it over.

MRS. DUTTON: Like out there, I know one man owns quite a bit of land but he's got sections of that land rented out to other families. Although he gets his living, but other families make a living from it and so it goes. And to say just one man loses his land, you know, there's more to it than that.

DAN VALERO: Right. And that's why I would suggest to you and you tell him and whoever else wants their input in this to write to let us know what affects we're going to have. Because no matter how comprehensive we try to make this EIS, there's always going to be something we're going to miss and that's why we really rely on citizen participation. Just because USGS has something about a particular area doesn't mean that that's all there is. You own the land and you know a lot about it and we need to know that.

MRS. DUTTON: I didn't think our word was worth two hoots after I read that.

DAN VALERO: It will be. I hope you don't feel that way because--

MRS. DUTTON: I sure do.

DAN VALERO: All I can say is that we do have to, we are required by law to not only publish your comments but we're required to respond to them.

MRS. DUTTON: You know, I don't think there would have been so much anger at the whole thing except the way it was done. That thing was in progress for three years before anybody knew anything about it, for three long years. Then they just drop this little bombshell on us in the newspaper that said "Here we come."

RALPH FLOURNOY: Well, land application alternative was not in the works quite that long. It was in effect for--

MRS. DUTTON: Well, I don't know what--for three years that they worked on it in the City of Scottsbluff.

RALPH FLOURNOY: I think they first announced their intentions to us in 1974 and the hearings

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were held about a year and a half later, in the first part of '76, at least on the south site.

MRS. DUTTON: I think they hired Wells in '73, is what it said, and we were what, '76? They said they had been at it for three years.

RALPH FLOURNOY: Yeah, he was hired about '73 or somewhere around there.

MRS. DUTTON: Then we get this notice in the paper they're coming, just like that, and I did not know the EPA worked like that. I mean, "Here, by golly, we're coming to get you, and you don't have any recourse." That was just the attitude when we went into those hearings.

RALPH FLOURNOY: And I think you have a recourse. I don't know why--I read both of those previous hearings. I admit I wasn't at either one. But I think there was at least a misinterpretation of at least EPA's intent at those hearings. My boss has told me, quite frankly, that we're not going to--if there's that much local objection to land application, that we're not going to cram it down somebody's throat.

Washington, quite frankly, is trying to push us pretty hard to go with land application alternatives. In fact, a new law that we signed last December provides additional monetary incentives to a city to go that way.

MRS. DUTTON: I heard--I guess it was

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something in the Denver paper a year ago, that this was what the big push was, toward land application. But like I said, what about the health hazards?

DAN VALERO: I'd like to add one thing to what I was saying a while ago. Another reason that we have to contact the Department of Interior is that they were involved with the draft of the different letters. They are involved under endangered species, Section 7 of the Endangered Species Act and they are a part of the Department of Interior.

MRS. DUTTON: I didn't know that the black-footed ferret was endangered. It's not been cited in Scottsbluff County--

DAN VALERO: That's the same reason that we have to send it to the Federal Highway Administration, the county highway departments and so forth, because they are involved. Even if it's indirectly, we want to get their input.

MRS. DUTTON: We had one of those out there about ten years ago and it drowned in the flood.

PRESIDING OFFICER AMSDEN: The black-footed ferret?

MRS. DUTTON: Right.

PRESIDING OFFICER AMSDEN: You should have kept--

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MRS. DUTTON: No, thanks, it multilated my cat.

PRESIDING OFFICER AMSDEN: Are there any other questions or comments that anyone has?

MRS. MYRNA JOHNS: I'd like to say--

PRESIDING OFFICER AMSDEN: Yes, ma'am.

MRS. MYRNA JOHNS: I'm Mrs. Johns. To me this is such a great thing, to come into a country and insist on people giving away or selling their land. You know, this is no small thing.

PRESIDING OFFICER AMSDEN: I understand that.

MRS. MYRNA JOHNS: This is the human element. Now she's talking about the black-footed ferret. Well, you know, the Department of Interior, all right, they take care of the birds and the bees and the animals. But let's take care of the people.

PRESIDING OFFICER AMSDEN: I understand, I understand. I'm a Kansan and I have deep Kansas roots and I understand the great attachment to a particular piece of land. I can relate to that very closely. So we do consider and understand that, very much.

MRS. MYRNA JOHNS: You know, it's a great thing in this nation of ours that we do have these families that hand down their parcels of land from father to son and

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generation after generation.

PRESIDING OFFICER AMSDEN: That's right.

MRS. MYRNA JOHNS: You know, that's a great thing.

PRESIDING OFFICER AMSDEN: I agree.

MRS. MYRNA JOHNS: It's a foundation we can't afford to be careless with.

PRESIDING OFFICER AMSDEN: Yes, it is, absolutely.

Any other questions? Yes, sir.

GARY GIPP: This is a big impact on the cities, you know, the cost and everything. We are going to go ahead possibly and spend this money. I don't know where we're going to come by it. If we do spend this money, is EPA going to shut the farming industry off to keep them from dumping their pollution into the river, you know, from the irrigation? I hear there's insecticides and stuff like that.

PRESIDING OFFICER AMSDEN: Mr. Gipp, that's a valid and interesting question. The limitations in the Federal Water Pollution Control Act and, more recently, the Clean Water Act as it was amended in 1977, December, mandate that all point source discharges of pollutants meet specific criteria. And a point discharge of pollutant means any discreet and confined conveyance, I believe, which

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discharges pollutants into waters of the U. S. So whether it's a municipality or an industry or a feed lot or whatever it is, there are limitations that they have to meet.

When you get to run-off or non-point source pollution, that's of course much more difficult to control. And we're evolving control mechanisms over that. The most recent amendments to the Federal Water Pollution Control Act contain a massive Secretary of Agriculture program for making grants to land owners to implement best management practices, which are really the old soil conservation practices. So we don't have the handle on non-point source pollution that is as effective as the handle on point source pollution. That's much harder to deal with, as you all know, and that's kind of up to the individual to adjust his practices so that he protects his own land and the water that is affected by run-off from it.

GARY GIPP: Is our pollutant that devastating to the river right now? I mean, you know--

PRESIDING OFFICER AMSDEN: That's a hard question to answer. Congress made a determination when they passed the Federal Water Pollution Control Act in 1972 that it's no longer--we no longer should say that before we can make someone take a pollutant out of the water that we have to demonstrate that that pollutant is damaging the water. And the reason they said that is because if you make that

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requirement a precursor to putting a pollution control in place, you end up never getting any pollution control. So they said that they were going to start from the premise that no longer in this country is it acceptable for people to dispose of their wastes freely by putting it into the water. And we'll promulgate regulations specifying on an industry basis what treatment is available, and, in addition, the states will promulgate water quality standards which are specific water criteria and you just have to--you have to meet those no matter what your discharge is and no matter how much you can demonstrate that you're not hurting the water.

Now the new amendments to the Act contain some waiver provisions and other provisions. They contain some more effective economic balancing processes and we're all kind of learning that law right now. We're really not too familiar with it. But that's kind of where we are now.

Are there any other questions? Yes, sir.

MR. DINEEN: How many acres are supposed to go into this lagoon?

RALPH FLOURNOY: On Page O-3 in Appendix O is a complete table listing all of the storage ponds and irrigation sites that would be required. Are you thinking of any particular city or what?

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MR. DINEEN: No. The site north of town.

RALPH FLOURNOY: North? All right. The amount of land is really independent of the site. It really depends on the volume of wastewater that we're generating. So it's basically the same amount of land at the south and at the north site or at least very close. For Scottsbluff, the lagoons themselves, we would need 110 acres; this is surface water area.

MR. DINEEN: It looks like to me you're figuring on the three towns being together.

RALPH FLOURNOY: Well, if you're talking about all three towns together, then you're talking about a storage pond of 214 acres. That doesn't include the dikes, that's just surface water area. You could probably add another 15 percent to that number, or maybe more, if you're going to include the dikes. So you're probably talking about somewhere in the neighborhood of 260 acres. That's just a rough estimate.

MR. DINEEN: That is if it's used for irrigation?

RALPH FLOURNOY: Yeah, that would just be the storage pond at the north site.

Yes, sir.

MR. CARLSON: I might have misread that

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but I thought in there it said 500 to 1000 acres.

RALPH FLOURNOY: Not for a storage pond. For the storage pond for Scottsbluff, like I say, we're talking about 110 acres. So basically, it ranges all the way from a low, like 110, up to 214, depending on whether you're talking about Scottsbluff and Gering, Scottsbluff, Gering and Terrytown, and so forth.

JERRY PETERS: It depends on whether you're talking about complete retention or for a storage pond for agricultural irrigation.

RALPH FLOURNOY: Right.

JERRY PETERS: You've got consideraly more acreage if you're going to use it for complete retention alternative.

RALPH FLOURNOY: Now on Page 184 is the acreage required for a complete retention at the various sites. Now those are going to be considerably more, obviously, because we're talking about no discharge from those lagoons, whereas the storage ponds, we're talking about maybe a five month storage period. I don't remember what was used. So obviously those are going to differ by a pretty good sized factor.

WALT HELSER: Approximately how many acres of parks, football fields, whatever we have in the City of Gering, Terrytown, Scottsbluff, could you put this

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irrigation water on?

RALPH FLOURNOY: Well, as I remember reading from the impact statement this morning, I think there's something like 200 acres of park land in Scottsbluff.

WALT HELSER: Football fields, baseball diamonds.

RALPH FLOURNOY: Well, you've got to remember that those are all scattered all around town which means that we're going to have to dig up streets and excavate to put the distribution system in.

WALT HELSER: Well, you're going to have to dig to get up there ten miles north.

RALPH FLOURNOY: Well, it's not going to be a paved surface at least. It's going to at least reduce the cost that much. Admittedly, we're going to have a force main and it's going to be an expensive force main. I think the cost in here is something over two million dollars.

WALT HELSER: At least they'll be taking care of their own.

RALPH FLOURNOY: Well, I don't deny that. I don't think there's sufficient acreage including all those sites you mention to dispose of that. We're talking about somewhere in the neighborhood of 2000 acres including buffer areas for irrigation alternative. We're talking about a pretty good portion of the whole City of Scottsbluff to get rid of that much.

PRESIDING OFFICER AMSDEN: Any other questions?

(No response.)

PRESIDING OFFICER AMSDEN: If there aren't any other questions, I'll thank you all for your strong sense of community for coming out on a night like this. I'll remind you that we would like to receive your written comments, if any, or any requests for either the summary or the EIS itself at our offices at 1735 Baltimore in Kansas City, Missouri 64108. And ask you once again if you haven't done so, to please sign your name and address outside on our sign-up sheet.

The hearing is closed at 9:52 p.m. Thank you very much.

(Whereupon, at 9:52 o'clock p.m., the hearing in the above-entitled matter was closed.)

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C E R T I F I C A T E

I, DAVID L. ARGIE, do certify that I appeared at the time and place first hereinbefore set forth; that I took down in stenomask the entire proceedings had at said time and place; and that the foregoing one hundred five pages constitute a true, correct and complete transcript of my said stenomask notes.

REPORTER

PENGAD CO., BAYONNE, N.J. 07002 - FORM 740

Addendum Number 3

Comment Letters From

Concerned Individuals

- Mr. Wayne Eisele, letter of 24 March 1978
- Mr. Wayne Eisele, letter of 3 February 1978 with copy of 23 February 1978 Environmental Protection Agency response also included
- Mr. Amos Carlson, letter of 14 March 1978
- Mr. Richard Scott, letter of 1 March 1978
- Mr. Henry Stanko, letter of 28 December 1977 (Letter of intent from Stanko Packing)
- Mr. Merl Stoman, letter of 5 April 1978
- Mr. Richard Flanery, letter of 18 October 1978 (Letter of intent from Flanery Foods)

Wayne Eisele
Route 4, Box 113
Scottsbluff, NE 69361
February 3, 1978

U. S. Envronmental Protection Agency
Region 7
1735 Baltimore
Kansas City, MO 64108

Dear Sirs:

Having presently reviewed the EIS for proposed expansion of existing wastewater treatment facilities, Scottsbluff, Gering and Terrytown, Nebraska, I have a few questions that I wish to submit for your consideration and answer prior to your intended public hearing at Scottsbluff, Nebraska.

Be advised that my interest in this matter is due to the fact that I own much of the acreage involved in the north irrigation site and have been desirous of purchasing waste water for farm irrigation.

It appears that the cost effective figures on the farm irrigation options have been badly distorted to eliminate the farm irrigation. More specifically, I note that farm irrigation with Scottsbluff waste water, page Q4, has been increased from $4,200,000, as previously proposed by Bell, Galyard and Wells Inc., to $7,127,000 which appears to include distribution of irrigation water, land for irrigation and several other charges not applicable to the north site irrigation. Could you furnish us the adjustments in the cost effective figures per 1000 gallons, for the north irrigation site to reflect the sale of water to farmer for distribution by purchaser on private land? Since this appears to involve nearly $3,000,000.00 in capital investment for the city, it is most critical and more so when projected to the three towns.

We note that the cost of construction of a storage pond at the north site is $1,424,000.00 for 214 acres or $6,654.00 per acre compared to a total retention pond at a valley site costing $3,586,000.00 for 1484 acres or $2,429.00 per acre for the combined three towns in both cases. Since the total retention pond is proposed over a high water table in gravel it would appear to be the most costly to construct. Can you give us a valid explanation of these cost figures and correction where applicable. This also appears to be a distortion to make the north irrigation site appear too costly.

If 1/8 inch per day of perculation is permitted, from a total retention pond, of water that is not clorinated, what would be the quality of the water entering the high water table at the proposed valley site for total retention?

Has there been water quality tests made in the water table immediately to the southeast of the existing Scottsbluff lagoons? What is the quality of this water if tests have been taken?

We are having some problem correlating the discharge, through perculation, of up to 45 inches per year of unclorinated water from a total retention pond at the rate of 1/8 inch per day into a high water table versus the objections

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to chlorinated water applied to crops, with just a few inches of water used for leaching, where the nearest well used for humans is well over a mile away and on the other side of the aquifier created by the existing irrigation canal plus the fact that a water table under the area to be irrigated is non-existent.

Be advised that we have some information on hand concerning the lack of ground water under the proposed north irrigation site as we have drilled many dry holes looking for stock wells.

Since boron has been identified several times in your EIS as a problem to farm irrigation we respectfully request more information on this. Is boron present in other water here besides waste water? We assume this will be an issue at your hearing which the public will want explained.

In our research pertaining to waste water irrigation we have found that many towns are growing alfalfa with waste water. Why was that not considered here in more detail? What are the objections to alfalfa?

Your attention to our questions is appreciated. We look forward to your reply. Thank you.

Sincerly,

Wayne Eisele

Wayne Eisele

cc City of Scottsbluff
cc Marks Morrison

UNITED ATES ENVIRONMENTAL PROTECTION GENCY

February 23, 1978

Scottsbluff, Nebraska
Project No. C310474-01

Mr. Wayne Eisele
Route 4, Box 113
Scottsbluff, Nebraska 69361

Dear Mr. Eisele:

Thank you for your letter dated February 3, 1978, regarding information in the Draft Environmental Impact Statement (EIS) for the Proposed Expansion of Existing Wastewater Treatment Facilities, Scottsbluff, Gering and Terrytown, Nebraska. We believe the following information will answer the questions raised in your letter.

The most recent submittal (copy attached) from Bell, Galyardt and Wells estimates irrigation at the north site to be $4,476,600 in capital costs. Capital costs referred to in this letter include all legal, administrative and engineering costs plus a 10 percent contingency fee. This latest estimate from the City's consultant includes no cost for distribution of the wastewater. The capital cost estimate for irrigation at the north site in the EIS is $6,631,000. This figure includes costs for purchase and improvement of the irrigation site, the distribution network and an administration building necessary for a City-owned operation. If these costs are subtracted for comparison sake, the adjusted capital cost is $5,260,000. The major remaining difference is attributable to the cost estimates for the storage ponds. We believe that the Wapora estimate is more realistic in light of the continuing escalation in construction costs and the extensive sealing of lagoons that may be necessary.

The adjusted figures in the cost analysis for those alternatives other than City ownership of the irrigation site are found on page 310, Table III-23. Case III gives the costs for the alternative involving sale of the treated wastewater to local landowners. The table shows there is no change in the cost analysis. The savings in land costs and distribution equipment is offset by the considerable loss in net crop revenue each year. The cheapest alternative is land rental, although the difference is not significant.

Your calculations regarding the construction cost per acre for the regional site are incorrect. The capital cost for this item is $3,586,000, however, the project will involve 673 acres of new water surface area, not 1,484 acres. The amount of additional water surface needed is shown in Table III-14, page 184, under the 1/8-inch per day percolation column. The unit cost is, therefore, $5,328/acre. Since the complete retention lagoon involves a larger lagoon than the storage pond for the irrigation alternative (by a factor of 3), we would expect a lower unit cost for construction.

The quality of seepage water entering the groundwater from the complete retention lagoons in the valley will vary seasonally. This is attributable to the variance in biological activity (treatment levels) as the temperature varies. The present plan calls for flow distribution to all cells, both existing (near the river) and proposed. Should a groundwater problem at the new valley site develop, the flow scheme could be changed to route all flow to the existing lagoons, then to the new lagoons. This would assure that the flow reaching the new lagoons would have received considerable prior treatment. Since the lagoon bottoms will be sealed with bentonite, we do not anticipate any problems in this regard. The lagoon cells can be resealed to reduce the seepage rate should conditions require it. Monitoring wells will be included in the project to monitor the groundwater quality. Periodic testing will be required to determine whether the levels of certain key parameters are changing.

Tests have been run on the groundwater at two wells near the Scottsbluff lagoons. These tests were run on samples from wells: (1) near the lift station, and (2) between lagoon cells 5 and 6. While additional tests might be required, two critical parameters, pH and nitrates, are within the Environmental Protection Agency (EPA) guidelines for drinking water.

The last paragraph on page one of your letter compares the north site land application alternative with the valley complete retention alternative. We agree that these two alternatives differ considerably in terms of groundwater depth, etc. These differences were carefully considered in the analysis of each alternative. Both preliminary designs are based on environmental factors and as such, meet EPA requirements. The major difference at this point is costs. These alternatives, including related costs, will be adjusted to meet any reasonable local environmental concerns stemming from the March 1, 1976, public hearing. Additionally, we must make clear that there are not presently any EPA objections, on environmental grounds, to the north site land application alternative as your letter suggests.

We have provided all information available to us on boron. This parameter is rarely analyzed during groundwater monitoring required by the State Department of Health. The question regarding the source of the boron was posed to the staff at the Panhandle Agricultural Station and others. There does not appear to be any simple answer for this. One factor is undoubtedly the concentration effect during the holding period in the lagoons. Should an irrigation alternative be chosen, additional study of boron concentrations and sources would need to be carried out.

The possibility of irrigating alfalfa, as you suggested, was investigated. The leaching rate required to maintain acceptable soil salinity levels is prohibitive for this crop. Please refer to Table H-2 on page H-10 of the EIS. The four crops considered are analyzed in that table.

We appreciate your interest in the Scottsbluff project and welcome any additional questions or comments you may have. The public hearing is scheduled for March 1, 1978, at 7:00 p.m.

Sincerely yours,

Paul M. Walker
Chief, Engineering Branch
Water Division

cc: Nebraska Department of Environmental Control

Mr. Wayne Eisele
Route 4, Box 113
Scottsbluff, NE 69361
March 24, 1978

Environmental Protection Agency
Region #7
1735 Baltimore
Kansas, MO 64108

Dear Sirs:

Having spent a great deal of time and effort in the last few years researching farm irrigation with waste water, I wish to pass on a number of observations concerning the environmental impact statement that has been discussed at public hearings at Scottsbluff, NE still open for written comments at the present time.

In the matter of public objections expressed in the variouse hearings that have been held, this seems to be the greatest deterent to farm irrigation with waste water for Scottsbluff.

The Scottsbluff hearings where these objections first surfaced were absolutely a failure as far as answering objections were concerned as those with the responsibility of answering questions had no experience and no knowledge of farm irrigation with waste water which resulted in most of the questions and objections going unanswered even though there are hundreds of projects operating now that do provide the needed experience data that was completely omitted at public hearings and also excluded from the Environmental Impact Statement to which these comments are directed.

All of the objections that I have heard at afore mentioned hearings have good answers that have not been presented.

Probably the greatest objection to farm irrigation with waste water is a fear of ground water pollution that would adversly effect drinking water. While there are no wells used for human consumption close to the proposed north irrigation site and only a few wells within three or four miles of this site this fear could be eliminated by including a rural public water system in the project to serve farm homes with drinking water piped from an area not close to the irrigation site.

In view of my own experience building several rural public water systems within the last five years, this appears to be a good method of eliminating fear for less than $100,000.00 in cost.

There are presently many rural public water systems now in operation due either to low quality ground water or a shortage of the same. There is lots of past experience available to verify feasability of this method.

Also this method is many times less costly than installing an underground drainage system to collect surplus leaching water.

Now concerning the cost of construction along with O & M on page Q4 of the EIS in question, I find that this is absolutly a gross deception for the purpose of making farm irrigation appear too costly in view of the public objections to waste water irrigation.

Far better to answer the objections effectively by learning the readily available facts than to select a more expensive option at taxpayers expense. More specifically, the $992,000 error on page Q4 that was pointed out at the public hearing as well as the inclusion of the cost of equipment for application of the water to crops which cost is not applicable to the north site.

Still more specifically, costs have been grossly inflated such as the pipe line to cost over two million dollars. Pipe of the type used in the Alaska oil pipe line would appear to be more than good enough for this project yet new 24 inch pipe of this type for the north site project, is now available delivered here for $700.000.00. The installation and county road right of way would cost no where near the remaining $1,482,000.00. This pipe line is priced at more than 40% too high. Then the 27% increase for engineering and administration is ridiculous to those of us associated with the construction industry as there is no justification for that rate.

Other items such as pumps are also priced a way out of line with actual cost even when adding installation, engineering, etc.

While the O & M figures for north site irrigation on page Q4 include the application of water, which should be deleted, other O & M cost are shown several times higher than is the case with other similar projects that include considerable transmition pipe line.

It seems to me that the cost experience of other facilities would be far more accurate than some of the wild guesses that appear in these pages of the EIS pertaining to O & M especially as well as construction and land cost. Other examples of wild guessing would be in the opposite direction on proposed valley retention where the land is valued at $150.00 per acre to make this look more cost effective while the actual value of this land is now $700.00 to $800.00 and more per acre. I haven't been able to buy any of this at $700.00 per acre so this guess was about 5 times or more too low.

Having spent the necessary time and effort to verify the few cost iniquities pointed out here it would be reasonable to assume there are many other figures just as erroneous in the EIS.

While there is so much evidence of inexperiance manifest in the studies and hearings that result in wrong decisions, it is even more inexcusable to ignore the application of information and experience gained by other facilities that have operated here in the mid-west for varying periods of time up to nearly one hundred years.

I don't believe the EIS cost information is accurate enough for either the Environmental Protection Agency of the City of Scottsbluff to make an intelligent decision for improving the Scottsbluff waste water facilities.

While some adjustments, to the cost errors, have been made, this is only a small start that needs to be vigorously persued.

Perhaps the next step should be to employ a qualified analyst to expose all of the errors and iniquities in the cost figures included in the EIS so there would be a legitimate basis for decision making.

Sincerly,

Wayne Eisele

Wayne Eisele

J.E.
cc Scottsbluff City Counsil

Scottsbluff, Nebraska
March 14, 1978

Environmental Protection Agency,
1735 Baltimore, Region VII
Kansas City, Missouri 64108

Dear Sirs:

I had previously written to you in a letter dated February 28, 1977, stating my disapproval of the Waste Water System of Scottsbluff being brought to a site north of the City and my reasons for opposing it.

I would like to state again that I dont see how the E. P. A. would approve the Waste Water Irrigation System. In the first place the land they are planning to irrigate will have to be bought by the City, as they cannot depend on someone else to use this water as they might want to use it one year but not the next. The City is going to have to have full control of this water at all times.

This land they are planning to irrigate is not farm land, it is below marginable farm land, if they plow it out of the native grassland perhaps in a couple of years if the Government decides to pay farmers for letting their land lay idle, this will be the kind of farm land that will be the first to go in the Soil Bank, then what will they do with the water?

This land would only be irrigated five (5) months out of the year, the rest of the year it would lay idle; with the wind we have in Western, Nebrask during the Winter and Spring this land would be a real desert as this is real blow sand soil on top soil and layers of hard pan underneath.

With these comments and the opposition I expressed in my previous letter; you will know why I am opposed to this Project. I have also expressed my opposition at the two Public hearings held in Scottsbluff.

Do hope you will give this serious consideration.

Sincerely,
Amon B Carlson
Scottsbluff Nebr.
Rt 1 Box 216
69361

REC'D
MAR 16 1978
EPA CNSL
REGION VII

LAW OFFICES

Richard Scott

OF COUNSEL
BRIAN R. WATKINS
LINCOLN, NEBRASKA

P.O. Box 8, 1315 Center Avenue, Mitchell, Nebraska 69357
308/623-2600

March 1, 1978

Environmental Impact Statement Program
Environmental Protection Agency, Region VII
1735 Baltimore
Kansas City, Missouri 64108

Dear Sir:

I would like to direct comments to you to be made a part of the hearing to be held on this date. The following items are several valid reasons which concerned citizens feel warrants speaking out against this method of wastewater treatment.

1) The wells and streams would be polluted;
2) There is hard pan under the soil so that seepage for purification would be at a minimum;
3) The soil is sandy and light and the wind erosion would decimate all of the top soil in a short time;
4) The soil is not suitable for irrigation and tillage;
5) The downstream outlets for irrigation runoff are few and there would certainly be a problem with flooding and open running of wastewater.

It is my belief, and several others with whom I have spoken, that there would be many far reaching effects of such a plan and I sincerely hope it will not be put into effect.

Very truly yours,

Richard Scott

Richard Scott

RS:jw

NEBRASKA BEEF PACKERS D. B. A.

STANKO PACKING CO.

2605 NORTH 7th ● GERING, NEBRASKA 69341 ● PHONE 308-632-6633 ● BOX 127

12-28-77

To Mayor McClellan
City of Gering, Nebraska

Honorable Mayor:

Reference is made to the city's pending application for Federal grant assistance under PL 92-500 for construction of water pollution control facilities.

PL 92-500 requires that industries discharging wastes to municipal sewer systems meet certain requirements relating to industrial waste pre-treatment and industrial waste cost recovery if that municipality is to receive construction grant funds under PL 92-500.

As previously discussed with city officials, our company plans to continue discharging to the city's sewer system and waste water treatment facilities for at least ten years or more and could even exceed twenty years, although discharge could actually stop at any time.

According to the wastewater sampling program at our plant effluent, Bell,Galyardt & Wells determined from a laboratory analysis that our level of BOD has been 980 mg/l and a TSS of 960 mg/l. Stanko Packing Company has used water meter readings to determine that our past flow has an approximate average of 108,000 g/d.

Therefore we conclude that the flow level previously calculated from the flume in the effluent discharge was not accurate. If we assume that the more realistic meter reading to be correct, new figures are to be given.

In this regard, and depending on future costs of the treatment facility, we anticipate that initially we will utilize the following daily capacities:

.108 MGD of flow
876 lbs. of BOD/day
860 lbs. of suspended solids/day

Sincerely yours,

Henry Stanko
Stanko Packing Company

April 5, 1978

Marion,

~~[illegible]~~

C.C. ~~[illegible]~~
Amsden

done 4/10

Environmental Protection Agency
Region VII, 1735 Baltimore
Kansas City, Missouri 64108

Gentlemen,

Concerning the North Land Application site of Scottsbluff's preposed waste water irrigation Projest. Everything seemed to to be fairly well covered at the March 1, 1978 meeting and there were things brought to our attention such as our water already having so many parts per million of Nitrogen and that it would take very little of the city's waste water leaching into it to make our drinking water unsafe. Since I believe the holding pond will seep.

there could be years of abnoral rainfall + wouldn't need this much irrigtion.

Sincerely,

Merl L Stoman

a

FLANERY FOODS, INC.
P.O. BOX 1225
SCOTTSBLUFF, NE 69361

CITY OF SCOTTSBLUFF
RECEIVED
OCT 2 1978
NEBRASKA

October 18, 1978

City of Scottsbluff
Attn: Frank Kohler, City Manager
Scottsbluff, NE 69361

RE: City's Pending Application for Federal Grant Assistance Under PL92-500 for Construction of Water Pollution Control Facilities

Dear Sir;

PL92-500 requires that industries discharging wastes to municipal sewer systems meet certain requirements relating to industrial waste pre-treatment and industrial waste cost recovery if that municipality is to receive constrction grant funds under PL92-500.

In this regard, we have reviewed the EPA regulations and guidelines relating to industrial waste pre-treatment and industrial waste cost recovery. In discharging to the City's treatment facility, we recognize the requirements which these regulations will impose upon us and will comply with these regulations including repayment to the City of that portion of the grant allocable to treatment of our wastes to the extent required by Federal law.

As previously discussed with City officials, our Company plans to continue discharging to the City's sewer system and wastewater treatment facilities indefinitely. For purposes of the requirements of 40 CFR Subsection 35.925-12(a), our intended period of use of the treatment works is 30 years, provided that our treatment costs are determined to be at a level which our operation can continue to absorb.

We anticipate that initially we will utilize the following capacities based on the average kill day loadings over a 30-day period:

Flow - 150,000 gallons per day
BOD - 375 lbs. per day
S.S. - 250 lbs. per day

There is the possibility that production will be increased in the future and we will request that the parameters be raised to the following:

Flow - 180,000 gallons per day
BOD - 450 lbs. per day
S.S. - 300 lbs. per day

If more information is desired, please advise.

Respectfully,

Richard D. Flanery
President
Flanery Foods, Inc.

RDF/ajb

Addendum Number 4

Comment Letters From

Federal, State, and Non-municipal Local Agencies

- Mr. William B. Patterson, Nebraska Acting State Conservationist, Soil Conservation Service, U.S. Department of Agriculture - letter of 28 February 1978
- Mr. John Raybourn, Regional Environmental Officer, U.S. Department of the Interior, Missouri River Basin - letter of 28 March 1978
- Mr. John E. Velehradsky, Chief, Planning Division, Department of the Army, Corps of Engineers, Omaha District - letter of 7 April 1978
- Mr. Warren G. White, Office of Planning and Programming - letter of 15 March 1978 transmitting the following:
    - Mr. Delvin Whiteley, Nebraska Games and Parks Commission - letter of 22 February 1978
    - Mr. Gayle H. Lewis, Chief, Planning Division, Nebraska Natural Resources Commission - letter of 24 February 1978
    - Mr. Clinton D. Stevens, Floodplain Engineer, Nebraska Department of Water Resources - letter of 10 February 1978
    - Mr. Dan T. Drain, Director, Nebraska Department of Environmental Control - letter of 1 March 1978
- Mr. C. F. Nutter, Deputy State Engineer, Nebraska Department of Roads - letter of 6 March 1978
- Mr. Carl O. Meier, President, Pathfinder Irrigation District - letter of 9 March 1978
- Mr. William M. Emerson, Scottsbluff County Planning Commission - letter of 2 March 1978

✓.INPR

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Room 345 Federal Building, Lincoln, Nebraska 68508

February 28, 1978

Dr. Kathleen Q. Camin
Regional Administrator
U.S. Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Dear Dr. Camin:

This is in response to your request of January 26 for a review and comments on the proposed expansion of existing wastewater treatment facilities at Scottsbluff, Gering, and Terrytown, Nebraska.

Appendix F, Soils Suitability for Agricultural Irrigation and Site Soils, has several omissions and some incorrect statements. The Keith soil series should include KeA and KeB. The KE shown is not a map symbol. Keith soils are deep soils. Soils that are shallow are not Keith soils.

The following map symbols are considered to be prime land in Scotts Bluff County: (when irrigated)

AcA
AcB
AnA
AnB
BfA
BfB
BvA
BvB
CoB
Dr
Gd
Hf
Ke
KeA
KeB
KoA
KoB
KuB2
Lr
Lt
Mg
Mo
Mt
MtA
MtB
5Mt
MzA
MzB
OBA
OBB
OC
OtB
Sa
TrA
Tv
TvA
TvB2

Appendix N, Agricultural Management Practices for Irrigation Alternatives: In the evaluation of irrigation systems (gravity irrigation, ridge and furrow, border, flooding, and contour ditch), a tailwater recovery system was not mentioned as a way to cover the surface water runoff problem associated with gravity irrigation. The conservation practice of bench leveling and contour bench leveling is an alternative for gravity irrigation on land slopes up to 8%. A contour bench method of gravity irrigation would help solve the odor and nuisance problem that can plague a system when waste water is blown up in the air with a sprinkler irrigation system (spray).

RECEIVED
MAR 8 1978
INTERMEDIA PROGRAMS
201

MAR 1978
RGAD
REGION VII
EPA

The draft impact statement presented for our review was very thorough in content and presented adequate alternatives.

Sincerely,

William B. Patterson

Benny Martin
Acting State Conservationist

United States Department of the Interior
OFFICE OF THE SECRETARY
MISSOURI BASIN REGION

IN REPLY REFER TO: ER 78/100

BUILDING 67, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

MAR 28 1978

Ms. Kathleen Q. Camin, Ph.D.
Regional Administrator
Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Dear Dr. Camin:

As requested in your letter of January 26, 1978, the Department has reviewed the Draft Environmental Impact Statement for the Proposed Expansion of Existing Wastewater Treatment Facilities at Scottsbluff, Gering, and Terrytown, Nebraska. We have the following comments:

General Comments

1. The proposed expansion of existing wastewater treatment facilities would have no impact on trust lands or Indian people within the jurisdiction of the Aberdeen Area Office of the Bureau of Indian Affairs, which has responsibility for lands and to Tribes in the three States of North Dakota, South Dakota, and Nebraska.

2. There should be no notable conflict between the proposed project and mineral industry activity or mineral resources in the area.

3. The proposed expansion will not affect lands or programs administered by either the Bureau of Land Management or the Bureau of Reclamation.

Specific Comments

1. III.E.15.a. Impacts on Archeological Resources (page 285): It is acknowledged on pages 110 and 285 that thorough site investigations by professional archeologists including exploratory digging as well as continued consultation with the Nebraska State Historic Preservation Officer should be carried out in areas to be affected by project implementation. If an adequate review of project impact on archeological resources is to be conducted, archeological survey findings have to be presented in the environmental impact statement.

Archeological surveys not yet undertaken for this project should be completed and the results evaluated before the final project design is determined. In addition, procedures for the evaluation of any archeological resources that may be encountered during project development should be included in the statement.

2. Pages 302-303: The potential for leakage through the liners used for the complete retention alternative is discussed; however, because of the importance of groundwater in the area, the statement should appraise more carefully the probable leakage through the various types of liners that might be used and make a related assessment of impacts on groundwater in sufficient detail to convey the magnitude of long-term effects. It does not appear appropriate to accept a high water table or a mounded water table beneath a complete retention facility. Page 223 comments that percolation rates through a pond liner at the Valley Complete Retention Area would be slow because of high water table conditions. Infiltration of groundwater into the ponds would be expected to be even more of a problem if the ponds must be deep enough to reach the water table. The statement should evaluate the effects on the ground-water reservoir of having ground water continually in contact with the pond liner either because the bottom of the pond might be below the water table or because the leakage through the liner might result in mounding.

3. Appendix R: We note that a discrepancy exists between recommendations made by Mr. Marvin Kivett, Nebraska State Historic Preservation Officer, in correspondence dated February 10, 1976 (which was paraphrased on page R-4 but not included in the draft document), and that dated September 6, 1977 (pages R-4 and R-1). The February 1976 correspondence apparently contained the recommendation that field reconnaissance be conducted for the south irrigation site at the City of Scottsbluff (page R-4). However, later correspondence dated September 1977 indicated that field reconnaissance of this area was not necessary (page R-1). In light of the lack of adequate discussion supporting the alteration of his earlier survey recommendations, we suggest that the State Historic Preservation Officer be contacted to clarify the need for field reconnaissance within the subject area. In addition, the results of such additional consultation should be included within the final statement.

Sincerely yours,

John E Raybourn

JOHN E. RAYBOURN
Regional Environmental Officer

DEPARTMENT OF THE ARMY
OMAHA DISTRICT, CORPS OF ENGINEERS
6014 U.S. POST OFFICE AND COURTHOUSE
OMAHA, NEBRASKA 68102

MROPD-M 7 April 1978

U.S. Environmental Protection Agency
1735 Baltimore
Kansas City, Missouri 64108

Gentlemen:

We have reviewed your draft EIS for the Proposed Expansion of Existing Wastewater Treatment Facilities, Scottsbluff, Gering, and Terrytown, Nebraska. With respect to Section 404 of the Federal Water Pollution Control Act Amendments of 1972, floodways, and archeological information, we have the following comments.

The final EIS should clearly state whether any wetlands will be involved in the selected or alternative plans. The location of all borrow sites used should be described as well as the amount of deposition of dredged or fill material within the ordinary high water mark. In addition, any channel changing the amount of riprapping needed, or erosion control measures to be implemented in conjunction with the bridge across the North Platte River, should be indicated. You should also indicate when the force mains across Winter's Creek and Gering Drain will be constructed and what the effects will be on spawning fish.

As you know, none of the facilities that will be built above the ground level and that will obstruct flood flows should be built in the floodway. This includes pump stations and access facilities. We conducted a flood insurance study for Scottsbluff and it was fully coordinated with the Consulting Engineer who did the Gering and Terrytown studies. The alignment of this floodway should be available from the Federal Insurance Administration (F.I.A.) soon. If you choose not to wait for the final map from F.I.A., you should be able to get the alignment on a preliminary map from the cities. We could also provide you a copy if you so desire.

We feel that the archeological surveys (both pedestrian and literature) have been adequate; however, a pedestrian survey on the south irrigation site should be conducted before a final EIS is completed. We also suggest that you coordinate with the Advisory Council on Historic Preservation prior to the completion of the EIS. We stress this because of the need for compliance with Section 106 of the National Historic Preservation Act of 1966 (P.L. 89-665) as modified by P.L. 94-422.

We appreciate the opportunity to review this draft document. Please forward a copy of the final statement when it becomes available.

Sincerely yours,

JOHN E. VELEHRADSKY, P.E.
Chief, Planning Division

OFFICE
OF
PLANNING
AND
PROGRAMMING

STATE OF NEBRASKA

BOX 94601 · STATE CAPITOL · LINCOLN, NEBRASKA · 68509 · (402) 471-2414

Governor J. James Exon
State Planning Officer

Jon H. Oberg
Director

March 15, 1978

Dr. Kathleen Q. Camin, Regional Administrator
U. S. Environmental Protection Agency
1735 Baltimore
Kansas City, Missouri 64108

Dear Dr. Camin:

Various agencies have reviewed and forwarded to this agency comments on the draft environmental impact statement for the proposed expansion of the wastewater treatment facility in Scotts Bluff County, Nebraska. The alternatives outlined and the subsequent discussion appear to adequately address the potential environmental impacts of the proposed action.

When an alternative is selected, this agency as well as most others would appreciate notification of the alternative selected along with the opportunity to review the final impact statement.

Comments from various agencies are enclosed for your information and consideration.

Sincerely,

Warren G White

Warren G. White
Natural Resources Coordinator

WGW:np
Enclosures
cc: Gayle Lewis
John Neuberger
George Ludwig
Del Whiteley

Nebraska Game and Parks Commission
2200 North 33rd Street / P.O. Box 30370 / Lincoln, Nebraska 68503

February 22, 1978

Ms. Neoma Parks
Project Review Coordinator
State Office of Planning & Programming
P.O. Box 94601, State Capitol
Lincoln, NE 68509

RE: SAI No. 78 02 01
Draft EIS
Proposed Expansion Wastewater Treatment Facilities for Scottsbluff, Gering & Terrytown - EPA

Dear Neoma:

The statement appears to properly reflect the importance of the Lake McConaughy - North Platte River Tributaries trout fishery and the emphasis our agency places on timing of actions and/or avoiding conditions that may affect spawning and migration habitat. It is our view that the statement is adequate in this regard since we would not anticipate need for design changes involving significant additional costs and/or delay, provided that facility design reflects these considerations. We would appreciate the opportunity to review and comment on the selected alternative should it involve one of the trout-supporting streams or should it involve discharge to the North Platte River.

In at least two instances the report cites the "degraded" classification contained in the Nebraska Fish and Wildlife Plan, Volume II, Nebraska Fishery Resources Inventory - 1972. The discussions contained in this inventory relative to this classification indicate a limited fisheries management potential. Since publication, we have learned that diversion dams form barriers to fish movement and are apparently a factor in limiting the fishery. Through stocking of hatchery-produced walleye and catfish above these barriers, we anticipate a significant improvement in the North Platte River warm water fishery in the vicinity of Scottsbluff and for some distance upstream.

The alternative most likely to affect threatened and endangered species is the Irrigation Alternative - North Site. In the event that this alternative is selected, we would recommend further study to ascertain presence of active prairie dog towns and possibility of associated black-footed ferrets, as well as swift fox, on the rangeland subject to conversion to irrigated crop production. We would appreciate the opportunity for review and comment of final plans for consideration in the design of this aspect of the project if this option is adopted.

It does not appear that differences in the potential impact on fish, wildlife, and outdoor recreation resources for the alternatives included are of sufficient magnitude to suggest an agency preference.

A primary concern with the Statement relates to its length and format. We did not record the considerable staff time required for our review; but if typical of time needed by the other reviewing agencies, it could represent thousands of dollars. One area in particular that appears amenable to streamlining would be the irrigation alternatives. This could be accomplished by separation into two distinct actions: waste treatment and irrigation.

Such an approach appears logical under the institutional arrangements indicated by state enabling laws and federal assistance programs. In Nebraska, Natural Resource Districts are empowered to sponsor irrigation development. Possibly it could have been pursued as a North Platte NRD and Panhandle Resource Conservation and Development irrigation project and as such been eligible for planning assistance from the Soil Conservation Service. In the event that such an institutional arrangement was acceptable to the NRD, the municipalities could pursue design of a waste treatment facility(ies) alternative that would preserve the option should effluent use for irrigation be determined at a later date to be acceptable and feasible under a separate feasibility analysis - environmental assessment conducted by the NRD. Should the NRD decline the opportunity to participate, it would appear reasonable to assume that the irrigation options are infeasible.

In at least two instances, the name "Velson" is listed as a reference in the discussion of trout fisheries and stream habitat. This undoubtedly refers to Rodney Van Velson, Game and Parks fisheries research biologist stationed at Alliance. Please check this out and make the necessary corrections.

Very truly yours,

Del Whiteley

Delvin M. Whiteley, Chief
Planning and Programming Division

DMW:GRC:kt

PROGRAMS:
SOIL & WATER CONSERVATION
WATERSHED PROTECTION
COMPREHENSIVE PLANNING
FLOOD PLAIN MANAGEMENT
DATA BANK
WATER QUALITY PLANNING
DEVELOPMENT FUND

STATE OF NEBRASKA
NATURAL RESOURCES COMMISSION
P. O. Box 94876
Lincoln, Nebraska 68509

Office Location:
Fourth Floor
301 Centennial Mall South

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FEB [illegible] 1978
OFFICE

February 24, 1978

Miss Neoma Parks
State Office of Planning and Programming
Room 1319, State Capitol, P. O. 94601
Lincoln, NE 68509

Dear Miss Parks:

We have reviewed the draft environmental impact statement for the proposed expansion of existing facilities for Scottsbluff, Gering, and Terrytown, Nebraska, SAI No. 78 02 01. We have the following comments based on the review conducted by the Commission staff.

Any of the waste treatment alternatives considered in the draft report would conform to the plans and policies of this Commission, including the North Platte River Basin Water Quality Management Plan (June 1975). Facilities located in designated flood plain areas, determined by the Department of Housing and Urban Development, must comply with local ordinances controlling flood plain development.

We would like the communities involved in this proposed expansion of facilities to consider the following aspects of the proposed wastewater treatment program.

(1) Regionalization

[illegible] emphasized

The Commission urges the communities involved to choose one of the regionalized methods. We recognize this is not the least costly alternative; however, we think the future conveniences and savings in operation, maintenance, and monitoring of one facility rather than two or three would be of great benefit to the communities. We think it would be worth the cost of regionalizing.

(2) Land Disposal

The Commission has favored land disposal for Scottsbluff in the past because it meets the national goals of zero discharge of pollutants and resource conservation and re-use. However, the information on soils in the prospective disposal areas concerns us. We think there is a possibility of groundwater pollution. We recommend more intensive geological studies of the disposal areas be completed before this alternative would be chosen.

Other factors making land disposal less attractive: (1) irrigation water is now available at a low price in all the disposal areas, (2) high energy requirements, and (3) native grassland might be disturbed. Land disposal would also be operationally more difficult to implement than the other alternatives. However, we think land disposal will remain a viable alternative if the concern about groundwater pollution can be alleviated.

(3) Complete Retention

This Commission recognizes the benefits of complete retention which include meeting the national goal of zero discharge of pollutants, low energy requirements, and low sludge handling requirements. It would also require no discharge permit or effluent monitoring. We think this alternative should receive favorable consideration by the communities, as it was the lowest cost regionalized alternative evaluated in the report.

The concerns listed about groundwater mounding can be handled by proper engineering design.

(4) Treatment and Discharge

This is a viable alternative which must be considered. However, the cost estimates in the report indicate that disinfection would not be necessary. We are surprised at this decision and are wondering if it was adequately evaluated. If disinfection were required, the cost would certainly go up. Since chlorination leaving a residual has been ruled out, some more expensive or more energy intensive disinfection method might be used. This would make this alternative much less attractive.

If disinfection is really not necessary, treatment and disposal may be a good choice as the water would be available for downstream uses and would not harm the migratory trout population. Discharge permits and effluent monitoring would be required.

Thank you for the opportunity to comment on this important action.

Very truly yours,

Gayle H Lewis

Gayle H. Lewis, P.E.
Chief, Planning Division

GHL:SH:mrp
cc: Dr. Camin, EPA
Nate Beezley, DEC

DEPARTMENT OF WATER RESOURCES
JOHN W. NEUBERGER
Director

LOCATION
301 Centennial Mall South

MAILING ADDRESS
P.O. Box 94676
Lincoln, NE. 68509

TELEPHONE
(402) 471-2363

State of Nebraska
J. JAMES EXON, Governor

February 10, 1978

IN REPLY REFER TO

Ms. Neoma Parks
Project Review Coordinator
State Office of Planning and
Programming
Room 1319, State Capitol
P.O. Box 94601
Lincoln, Nebraska 68509

RE: Upgrade treatment facilities
Environmental Protection Agencies
SAI No. 780201
Within the 100-year floodplain of
the North Platte River

Dear Ms. Parks:

This department has reviewed the above captioned proposed project. According to Sections 2-1506.12 and 2-1506.14 of the Revised Statutes of Nebraska, the applicant should apply for a Flood Plain Permit if the project is located within the 100-year floodplain.

The applicant may obtain more information and the necessary application form by contacting this department.

Yours truly,

DEPARTMENT OF WATER RESOURCES

Clinton D Stevens

Clinton D. Stevens
Flood Plain Engineer

CDS:ljt

Nebraska Department of Environmental Control

J. James Exon, *Governor* Dan T. Drain, *Director*

March 1, 1978

RECEIVED
MAR 6 1978
STATE PLANNING OFFICE

WPC

Ms. Neoma Parks
State Office of Planning
and Programming
Room 1319
State Capitol
P. O. 94601
Lincoln, Nebraska 68509

RE: Draft Environmental Impact Statement for Proposed Expansion of Existing Wastewater Treatment Facilities-Scottsbluff, Gering, and Terrytown, Nebraska

Dear Ms. Parks:

We have reviewed the above-referenced document with respect to our authority under the NPDES permit program. This document describes the environmental effects of numerous treatment alternatives. In addition, general engineering, geological, soils and water quality considerations are discussed. Each of the alternatives considered would provide improved wastewater treatment and, therefore, result in improved stream water quality.

Specific comments are enclosed. These comments have been forwarded to the U. S. Environmental Protection Agency for consideration during preparation of the final EIS.

If you have any questions or comments, please contact our office.

Very truly yours,

Dan T. Drain

Dan T. Drain
Director

RDT/th
Enclosure - Comments

Mail, Box 94653 Statehouse Station Office, 301 Centennial Mall South Lincoln, Nebraska 68509 (402) 471-2186

COMMENTS ON DRAFT EIS
SCOTTSBLUFF, GERING AND TERRYTOWN
WASTEWATER TREATMENT FACILITY EXPANSION

1. Page 209, paragraph 2: Use of "permanent" to describe an aquifer or water table is misleading and scientifically inaccurate. Groundwater systems and water tables are dynamic, not static or permanent. We suggest that the term "regional" would be a preferred adjective to describe the water table discussed in Section III, E. 5.

2. Surface Discharge Alternatives.

   Upgrading of the existing facilities to meet current NPDES effluent limitations for BOD_5 and Total Suspended Solids would result in a higher quality effluent being discharged. Proper operation and maintenance programs would be required to maintain the degree of treatment necessary to provide good effluent quality. NPDES monitoring would be necessary with this option.

3. Complete Retention.

   This alternative is the lowest life-cycle cost, regionalized alternative evaluated in the EIS. NPDES permit requirements would not apply to a complete retention facility nor would discharge monitoring be necessary. The beneficial effect of complete retention on surface water quality and overall operational and maintenance costs for this type of system are a major benefit. Proper engineering design and operation and maintenance should provide for adequate groundwater protection.

4. Land Disposal.

   Land disposal of effluent has been looked upon as an excellent opportunity to reuse an available resource rather than discharging it to a stream. This approach has benefits similar to the complete retention alternative with respect to instream water quality. If this alternative were to be chosen, the specific irrigation sites should not be selected until adequate geological and soils analysis have been completed. Proper engineering design along with a sound management program based on site specific soils information and continuing monitoring would be necessary to provide protection to the groundwater in the area.

5. Regionalization.

   Although the alternatives discussed under regionalization are not the most cost-effective methods of treatment when compared to separate facilities, consolidated management of one facility as compared to two or three could be of future benefit to the communities.

- INTPK
DAV

State of Nebraska
J. JAMES EXON, GOVERNOR

DEPARTMENT OF ROADS
DIRECTOR-STATE ENGINEER
DAVID O. COOLIDGE

P. O. BOX 94759
LINCOLN, NEBR. 68509
402-477-6012

Dr. Kathleen Q. Camin, Ph.D.
Regional Administrator
United States Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

March 6, 1978

Dear Dr. Camin:

RE: Draft Environmental Impact Statement for the Proposed Expansion of Existing Wastewater Treatment Facilities at Scottsbluff, Gering and Terrytown Scotts Bluff County, Nebraska

We have reviewed the above noted Environmental Impact Statement and offer the following comments:

1. We understand that at this time no alternative has been selected. We would again call attention to our comments regarding attachment of a force main the bridges mentioned in our letter of July 18, 1977, and included on pages D-2 and D-3 of the Statement. Plans for the bridges mentioned in the third paragraph of our letter are complete and we anticipate letting a contract for the bridge over the Platte River in the fall of this year.

2. We found it rather difficult to locate some of the proposed treatment facilities as they relate to the road system in the area. The Department of Roads has large scale county maps which show the road system which could be made available upon request.

We appreciate the opportunity for review of the draft statement. We would also appreciate receiving one copy of the final statement when it is available.

Very truly yours,

DEPARTMENT OF ROADS

C. F. Nutter
Deputy State Engineer-
Engineering Services

CFN/GG/bv

cc: R. H. Hogrefe-FHWA
Nebraska Office of Planning & Programming-Kuzelka
G. Grauer, NDOR
D. Motycka, NDOR

MAR 1978
RGAD
REGION VII
EPA

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MAR 9 1978

215 INTERMEDIA PROGRAMS

Pathfinder Irrigation District

P. O. Box 338
Mitchell, Nebr. 69357
(308) 623-1022

March 9, 1978

Environmental Protection Agency
1735 Baltimore-Region VII
Kansas City, Mo. 64108

RE: North Irrigation Site
Force Main-Sewage
Scotts Bluff Co. Nebr.

Gentlemen:

This letter is to inform your agency of the requirements of the Pathfinder Irrigation District for pipelines crossing our canals and laterals.

> "The Pathfinder Irrigation District requires any pipeline crossing our canals and laterals be constructed over and above said systems so as not to interfere with the operation and maintenence of the system."
>
> "Any and all construction work has to be approved by the Board of Directors of the P.I.D. and the Bureau of Reclamation before work begins."

Sincerely yours,

PATHFINDER IRRIGATION DISTRICT

Carl O. Meier, President

mh

Carl O. Meier

RECEIVED
MAR 14 1978
ENGINEERING BRANCH
WATER DIVISION

216

Scotts Bluff County Planning Commission

Gering, Nebraska 69341

March 2, 1978

RLF

U.S. Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64100

Dear Sirs:

March 1, 1978, E.P.A. Region VII held a hearing of a Proposed Expansion of Existing Wastewater Treatment Facilities for Scottsbluff, Gering, and Terrytown, Nebraska. This hearing was attended by myself and a few members of the Scottsbluff County Planning Commission. All of us present at this meeting, were quite concerned of the large area in Scotts Bluff County Jurisdiction. This Impact Statement, we believe, should have been brought to the County Planning Commission's attention at the beginning of proposal. Scotts Bluff County Planning Commission is concerned about any development in the County, expecially of one of this magnitude.

In the future we would appreciate prior knowledge of any study or proposal involving rural areas of Scotts Bluff County. This notification will help the Commission preform its' function, which is to promote health, safety, morals, convenience, order, prosperity, and welfare of the present and future inhabitants of Scotts Bluff County. This function is granted to the Commission by the citizens of the County and we as the Commission will perform this function to the best of our ability.

We cannot perform this without the consideration from E.P.A. in notification of these proposals

SCOTTS BLUFF COUNTY
PLANNING COMMISSION

William M. Emerson
William M. Emerson,
S.B. County Building & Zoning Dir.
1001 Ave. "I"
Scottsbluff, Ne. 69361

RECEIVED
MAR 8 1978
ENGINEERING BRANCH
WATER DIVISION

WME/cmk

cc: File
Senator Bill Nichol
Star-Herald - Editor
Scotts Bluff County Commissioners
City of Scottsbluff

Addendum Number 5

Comment Letters from

Municipalities and Their Engineers

- Scottsbluff
  - W. James Wells, Jr. and Charles A. Haas - letter of 16 March 1978 to Frank Koehler
  - Frank U. Koehler, Scottsbluff City Manager - Memo of 27 March 1978 to the Mayor and City Council
  - W. Scott Rynearson, Bell, Galyardt and Well, Inc. - letter of 29 March 1978 to Frank Koehler
  - Frank U. Koehler, Scottsbluff City Manager - Memo of 11 August 1978 to Mayor and City Council
  - Frank U. Koehler, Scottsbluff City Manager - letter of 16 August 1978 to U.S. EPA, Region VII
- Gering
  - John McLellan, Jr., Mayor, City of Gering - letter of 18 April 1978 to U.S. EPA, Region VII
  - W. Scott Rynearson, Bell, Galyardt and Wells, - letter of 10 April 1978 to John McLellan, Jr.
  - W. James Wells, Jr. and Charles A. Haas - letter of 17 April 1978 to Richard J. Kroon
  - Richard J. Kroon, Gering City Administration - letter of 26 July to U.S. EPA, Region VII

° Terrytown

- W. Scott Rynearson, Bell, Galyardt and Wells - letter of 10 April 1978 to Barbara Carpenter
- Barbara Carpenter, Mayor, Village of Terrytown - letter of 19 April 1978 to U.S, EPA, Region VII

City of Scottsbluff
Nebraska.
69361

March 31, 1978

Environmental Protection Agency
1735 Baltimore
Room 249
Kansas City, Mo 64108

Attn: Mr. Edward C. Vest, Environmental Impact Statement Coordinator

Dear Mr. Vest:

Enclosed herewith are the following items:

1. A copy of personal comments of W. James Wells, Jr. and Charles A. Haas dated March 16, 1978.
2. A memorandum to the Honorable Mayor and Members of the City Council from Frank U. Koehler, City Manager dated March 27, 1978.
3. Copy of a letter from Bell, Galyardt Wells dated March 29, 1978.

These comments represent the comments of the City of Scottsbluff on the Environmental Impact Statement.

It is important to emphasize that there are sufficient questions with regard to costs, environmental impact, etc. that the City of Scottsbluff is not prepared to make a recommendation until such questions can be resolved.

We look forward to receiving answers to these questions so that the project may progress at the earliest possible time.

Sincerely yours

Frank U. Koehler

Frank U. Koehler m/w
City Manager

FK/mw

encs.
cc: Ne Department of Environmental Control
Tim St Onge, Water & Sewer Superintendent
W. L. Ferguson, City Clerk

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ENGINEERING BRANCH
WATER DIVISION

11C

March 16, 1978 Re: Scottsbluff, Nebraska

Mr. Frank U. Koehler
City Manager
City of Scottsbluff
Scottsbluff, Nebraska

Dear Mr. Koehler:

The following are the personal comments of W. James Wells, Jr. and myself regarding the "Draft Environmental Impact Statement for the Proposed Expansion of Existing Wastewater Treatment Facilities at Scottsbluff, Gering and Terrytown, Nebraska", dated December, 1977:

A. Pages 121 through 125 and Pages G-1 through G-8 Industrial Design Loadings.

1) Flanery Foods. We do not understand the mathematics of Wapora's development of design wastewater loadings for Flanery Foods illustrated in Table G-1. According to the information supplied in the EIS, sampling data from Flanery Foods in 1974 provided 11.2 lbs BOD/1000 LWK, 12.7 lbs SS/1000 LWK, and 6.2 lbs O & G/1000 LWK at an average production rate of 332,000 lbs LWK/day. Wapora states that these unit loadings should be increased by 20% to reflect waste loads at the maximum production rate of 400,000 lbs LWK. Our experience in the red meat industry indicates that unit loadings do not generally increase with an increased kill rate. In our opinion, the unit loadings in Table G-1 should not be increased for the projected design loadings.

If however, the unit loadings are increased by 20 percent as proposed by Wapora, and a production rate of 400,000 lbs LWK is assumed, the resulting loadings are as follows:

	BOD_5	SS	O & G
Lbs/day	5,360	6,080	2,960
	(4,524)	(5,080)	(2,416)
Lbs/1000 LWK	13.4	15.2	7.4

The loadings are higher than those developed by Wapora in parenthesis above. The City should ask for an explanation.

If the unit loadings shown in Table G-1 of the EIS are not increased and a maximum production rate of 400,000 lbs LWK is utilized, the design loadings for Flanery Foods would be as follows:

	BOD_5	SS	O & G
Lbs/day	4,480	5,080	2,480
Lbs/1000 LWK	11.2	12.7	6.2

Since these loadings are essentially the same as the Wapora design loadings, perhaps the unit loadings were not increased as the text indicates.

B. Page 126 - Industrial Pretreatment

Table III-5 illustrates anticipated reductions in raw meat packing wastewaters by various pretreatment systems. Our only comment is in the area of oil and grease. In our opinion, 50% grease removal through fine screening is not obtainable. The percent grease reduction should probably be in the area of 25-30%. Grease removal of 84% for fine screening and DAF is also too high in our opinion. A more realistic and consistent removal percentage for grease is 55-60%, with perhaps 70-80% with chemical addition. We have considerable experience with wastewater pretreatment for the red meat industry and can substantiate our recommendations with data.

C. Page 128 and Appendix I - Infiltration/Inflow Analysis

Wapora made several comments regarding the Infiltration/Inflow Analysis (I/I) in the Facilities Plan dated August, 1975. On Page I-1 Wapora states:

> "Estimation of infiltration in that report (BGW I/I of August, 1975) compared peak flow data for August and December, 1973 and assumed that infiltration occurred only during winter months when the groundwater table in the City is below the major portion of the sanitary sewers".

The BGW I/I of August, 1975 on Page II-9 states the opposite fact. Flow measurement readings were taken in the summer (August) when the groundwater elevation is above many of the sewers due to a rise in the water surface elevation of the North Platte River. From these summer flows, winter flows (during the winter groundwater is below the sewers) were subtracted to determine infiltration.

Wapora also questions the accuracy of the inflow quantities in the Facilities Plan. Wapora states on Page I-2 of their EIS as follows:

> "Estimates of the inflow rate may also have been based on an insupportable assumption, i.e., that high water marks in manholes along the main interceptor indicate maximum peak flows experienced. Interviews with local officials indicate that the interceptor is used to store sewage during repair on the main pumps at the treatment plant lift station. High water caused by storage would not indicate peak flows, therefore"

According to City personnel, the high water marks measured in the interceptor were upstream of the point where water is stored during servicing of the lift station pumps.

D. Page J-3 - Trapezoidal Distribution Ditch

In the 4-1-1 lagoon flow configuration, Wapora suggests that the first four lagoons at Scottsbluff be operated in parallel with flow properly distributed by a concrete lined trapezoidal ditch. The flow distribution sought may be achieved through use of the ditch; however, we feel that such a structure will cause endless maintenance problems. During cold weather flow, wastewater will freeze in the ditch resulting in poor performance of the discharge weirs. During summer sandy soil will drift into the ditch causing numerous shut downs for cleaning purposes.

The EIS does not develop the cross-sectional configuration of the trapezoidal section or the ditch slope. Will the ditch be located in the existing lagoon dike or will the dike be widened to the north to facilitate the structure? The top of the dike must be able to carry vehicle traffic for pond maintenance. If the ditch is located in the existing dike (assuming no dike widening) then grating must be installed to support vehicles.

The complete retention pond alternative illustrates use of the trapezoidal ditch from Lagoon Cell No. 1 to No. 6. Wapora should be made aware of the gravel road running north and south between the last two lagoons. The road leads to the City tree disposal area. If the ditch is allowed to be installed between the last two cells, the road will be blocked. As a result the road will have to be relocated or a grade separation be designed and constructed.

E. Page 134 - Increase in Height of Lagoon Dikes

Wapora states on Page 134 of the EIS:

> "Increasing the heights of the lagoon dikes will also be incorporated into alterations of the lagoon system as proposed in the Facilities Plan".

This appears to us to sound like Wapora is planning on increasing the height of dikes of the entire Scottsbluff lagoon system. The Facilities Plan of August, 1975 on Page V-13 indicates that only the new aerated lagoon dikes will be increased in height.

Increasing the dike heights of the existing lagoon system will prove to be extremely expensive and difficult. The new soil fill material will have to be carefully compacted on top of existing compacted soil to assure minimum percolation losses.

F. Page Q-4 Estimated Total Project Cost for A.I.N.

There is a considerable difference in the estimated cost of the north irrigation site in Wapora's Study (A.I.N.) as compared to the comparable cost in the Facilities Plan. Wapora's total estimated project cost is $6,631,000 as compared to $4,476,600 for the Facilities Plan. Some of the reason for this cost difference is the difference in philosophy of the two irrigation systems. Wapora assumes the irrigation land will be purchased along with the center pivot irrigation units and connecting piping by the City. In the Facilities Plan the assumption is made that the land will not be purchased and that the landowners will purchase the irrigation equipment and connecting piping. The $772,000 for distribution and $167,000 for land should be deleted from Wapora's estimate.

Wapora estimates the cost of irrigation storage ponds at $1,016,000 as compared to the estimate in the Facilities Plan of $408,200. Wapora should be asked for a detailed breakdown of cost estimate for the storage ponds including earthwork quantities and earthwork prices per unit quantity, lagoon sealing costs, dike erosion protection, and control structures to determine the reason for the difference in the estimates.

Wapora's estimate of cost for a pump station pumping wastewater from the existing lagoons to the irrigation site is $352,000 as compared to an estimate of $90,000 in the Facilities Plan. Wapora should be asked for a detailed breakdown on costs for the pump station in terms of building size, building construction, number of pumps and capacity, pump controller type, etc. for comparison to determine the reason for the cost difference.

Wapora is recommending three different buildings; an operations building, a pumping station, and an administration building and laboratory. While all the functions served by the three buildings may be necessary, the functions should be consolidated into two buildings to save on capital expenditures.

Wapora's estimate of capital cost for the diffused aeration system at the existing lagoons is $272,000 as compared to the estimate in the Facilities Plan of $176,000. Wapora should be asked for a breakdown of their estimate including the number and estimated cost of the air blowers and aerators including the cost of the interconnecting piping for comparison to the Facilities Plan estimate.

After reviewing the mathematics of Wapora's cost estimate, two errors were discovered which cancel each other out. The present worth of salvage value was mistakenly added instead of subtracted from project costs, however, the annual operation and maintenance costs were not correctly added to the annual costs.

In summary, Wapora should be asked for a detailed breakdown of their cost estimates for A.I.N. so that a detailed comparison to the estimate in the Facilities Plan can be made.

G. Page Q-3 - Complete Retention Valley - CRV

Wapora does not provide a cost for site improvements under Item No. 5. Site improvements include such necessary items as access roads, fencing, drainage, and seeding. These costs should be included.

Wapora has estimated the cost of land at about $150 per acre for the valley complete retention pond site. A land cost of $300 per acre is more realistic. This higher land value should be utilized.

H. Page Q-4 - Dissolved Air Flotation - S.D. 4

There is a substantial difference between the estimated cost of the DAF alternative developed by Wapora and that developed in the Facilities Plan. Wapora's total project cost is $1,249,000 compared to $3,171,500 in the Facilities Plan. Some of this difference is due to the fact that Wapora does not plan to utilize storage ponds for winter storage, but rather proposes to operate the DAF system year around. In our opinion, winter storage is necessary because the treatment inefficiency of the stabilization lagoons in the winter will not be adequate to oxidize dissolved organic material due to reduced bacterial activity because of winter temperatures (35-40°F). In our opinion, the lagoon treatment system will not be able to meet the BOD_5 discharge limitations in their NPDES permit during winter operation. With an ice cover in the winter, neither algae nor wave action can supply oxygen to the lagoon system. Under these conditions the soluable BOD can easily exceed the permit limitations.

There are other estimated costs that are not readily apparent in Wapora's estimate such as mechanical, electrical, dewatering, site improvements, and dike erosion protection.

> Under this option, Flanery Foods will be required to install a DAF system and anaerobic-aerobic lagoons. Wapora does not specifically mention where the lagoons will be located. The lagoon location is critical because of space limitations around Flanery Foods. In addition, there will undoubtedly be public opposition to anaerobic lagoons because of hydrogen sulfide odors.

Please feel free to enclose our comments in a letter the City of Scottsbluff may wish to send to EPA commenting on the Environmental Impact Statement.

Very truly yours,

W. James Wells, Jr.

Charles A. Haas

Charles A. Haas

City of Scottsbluff
Nebraska
69361

March 27, 1978

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ENGINEERING BRANCH
WATER DIVISION

MEMORANDUM

TO: THE HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL

FROM: Frank U. Koehler, City Manager

Re: Comments on Draft Environmental Impact Statement for Proposed Expansion of Existing Wastewater Treatment Facilities, Scottsbluff, Gering and Terrytown, Nebraska.

The following comments have reference to the Draft Environmental Impact Statement referred to above which was presented at a public hearing at the Panhandle Station on March 1, 1978. It is the intent of these comments to not duplicate the comments already provided to you from W. James Wells, Jr. and Charles A. Haas. The additional comments of Staff are as follows:

Page 13.

Reference is made in the first point on that page to "overloading and inefficient operation of Scottsbluff Lagoon System". The use of the word "inefficient" implies to the layman that the lagoons could be operated in a different manner to achieve more effective treatment. It is our understanding that the use of the word "inefficient" is not intended to imply that but is intended to state that the system as designed is limited in its ability to meet the current federal standards. This reference should be clarified.

Page 74 and 76.

Reference is made on both pages to the City of Scottsbluff Permit No. NE0036315 from the Department of Environmental Control for Effluent Discharge. The references ignore the fact that the Department of Environmental Control has issued an order modifying the schedule of compliance to achieve instruction by 1979.

Page 129.

In the section on the Collection System Options projection is made of the load of the Airport Sewer based on current use only. At the present time the Hillerege Addition is constructing a sanitary sewer which will be connected to the Airport Sewer adding to that load. In addition, the industrial growth projected at the airport will also increase the load.

Pages 178 and 185.

Reference is made on these pages to the possibility of Terrytown's waste waters being transported across the Nebraska Highway No. 71 bridge to the Scottsbluff interceptor and Gering's industrial and domestic waste waters being mixed and transported to the Scottsbluff interceptor through a forced main attached to the new bridge on 21st Avenue and being added to the Scottsbluff interceptor at that point. It may be feasible, as suggested on page 185, to accept the Terrytown waste waters if a new sanitary sewer were installed on Broadway Avenue to replace the combination sanitary-storm sewer that presently exists. However, it seems unlikely that the present interceptor would have the capacity to handle both the Gering and Terrytown wastes and, therefore, consideration is necessary to increasing the capacity of that interceptor if a regional alternative requiring use of the interceptor were adopted.

Page 253.

Reference is made on this page to "Municipal Tax Losses". First, it should be noted that the tax losses referred to would in fact be County taxes and not municipal. Second, the proposal of the City's Consulting Engineer is to leave the land in private ownership and, therefore, there would be no loss in tax revenues to either Scottsbluff or Sioux County except possibly for a pumping station space. The latter would be more than offset by the investment made by the property owner in new facilities if the irrigation alternative were adopted.

Page 285.

It should be clarified that the last sentence in the first paragraph refers entirely to the Valley Irrigation area or Valley Complete Retention Site and that the reference to force main routes does not refer to the force main routes serving either the north or south sites.

Page 305.

In the section on "Summary of cost-effective analysis" the consultant appears to use the phrase "administrative expenses" in a very broad and unusual manner. The expenses referred to in the study do not include past debt service, administrative expenses, operating and maintenance expenses for the collection system or billing and collection expenses. It is not clear whether the consultant intended to include all of these in their use of the term "administrative expenses" or not but this certainly is not a normal use of the term in municipal government. The language relating to this term ought to be clarified.

Based on the questions raised by Mr. Wells and Mr. Haas it does not appear that the City has sufficient information as to the cost relationships between the various alternatives to make a judgment at this time as to which would be the City's preferred method of treatment based on a cost effective analysis only. It is recommended that EPA be requested to obtain answers from WAPORA as to the questions raised and, thereafter, that data could be used by the City to state a preference.

Respectfully submitted

Frank U. Koehler

Frank U. Koehler
City Manager

FK/mw

bell
galyardt
wells

[illegible]
engineers

CITY OF SCOTTSBLUFF
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MAR 3[illegible] 1978
NEBRASKA

March 29, 1978

Mr. Frank U. Koehler
City Manager
City of Scottsbluff
Scottsbluff, Nebraska 69361

Reply to Omaha

Re: Waste Treatment Facilities
Scottsbluff, Nebraska
BGW No. 730504

Dear Mr. Koehler:

This letter is to confirm our review comments on EPA's Draft Environmental Impact Statement (December, 1977) which we telephoned to you on the morning of March 27, 1978.

In general, we feel that the EIS displayed a great amount of objectivity and encompassed a wide variety of treatment alternates, but still contained enough inaccuracies, that if corrected, could change the desirability of some of the alternatives. In addition, we feel that no one alternative was shown to have a clear cut advantage in terms of costs or environmental impact. The decision should remain with the taxpayers and sewer customers through their elected representatives and consulting engineer.

More specifically, we also had the following comments and observations after reviewing the Draft EIS for the City of Scottsbluff.

(1) All the treatment alternatives were designed and priced after a series of assumptions were made about wasteflows, industrial waste management practices, linear population growth, etc. The treatment alternative that is finally adopted should be one which is readily expandable or alterable to allow for future variance or even radical departure from original design parameter assumptions.

(2) We disagree with the report's assumption that the rerouting of the airport sewer is dependent upon the treatment option and final effluent disposal method (Section III. B.2., p. 129). Future sewer customers could contribute wastes requiring full treatment no matter which treatment scheme is constructed.

(3) We question both the engineering and cost effective rational of using a "concrete lined trapezoidal ditch" as described on page J-3 to accomplish a uniform distribution of influent wastewater to the first four lagoons. If the intent is to have even suspended solids distribution, a forcemain with three 50/50 splits, accomplished with wyes and balanced head losses

between lines, will have more consistent results than open channel distribution by gravity. This may work with irrigation water, but suspended solids will settle out at the head end of the channel when raw, screened sewage is being distributed. Open channel flow of raw sewage for these distances lends itself to odor problems and health hazards and is not recommended by modern sanitary engineering practice.

(4) The EIS tends to favor retention and maximum utilization of existing waste treatment facilities and sites which is reasonable.

(5) Initial theoretical siting assumptions may not always be practical or cost effective when actual construction is reached. It is much easier to assume the availability of a theoretical site at a fair market price in order to expedite a report than to actually obtain it from its owner. In the case of the Valley Irrigation alternatives, the theoretical site may never become available in the desirable area, so therefore, the entire assumption is invalid.

(6) National or State pricing sources, even though they are documented, do not necessarily make them accurate for local conditions in Scottsbluff. One example of this is the erroneously low land prices of $120 and $150 per acre quoted on page P-5. With the numerous assumption made in the EIS, we believe that other such pricing errors will be obvious to local residents of Scottsbluff.

(7) The EIS reports the maximum percolation rate allowed by the State of Nebraska to be 1/8" per day on page 148 and 1/4" per day on page 149. Our Facilities Plan of August, 1975 used 1/8" per day.

(8) The EIS discusses hydraulic management and assumes that sugar beets will be irrigated at a uniform rate over a 5 month period without any discussion of nutrient application management during various periods in the growing season.

(9) Crop selections were heavily weighed toward "boron tolerant" crops, yet the EIS states that the boron concentration in the theoretical irrigation water are only widely varying estimates and that prior to implementing agricultural irrigation with wastewater, further sewer system monitoring and investigations should be undertaken to locate and control the source of boron. If the source of boron is to be stopped before irrigation, other crops could also be considered on the basis of their other desirable parameters.

(10) Will the boron concentration factor in the field be the same as that for TDS as assumed, and is it known for other installations or literature review what removal or loss of boron will occur through lagoon treatment and irrigation storage (pp. 0-4 & 0-5)?

(11) It is reported that TDS, nitrogen and sediment runoff will have an adverse effect on groundwater quality, surface water quality and aquatic biota from the complete retention alternates through percolation and from irrigation through percolation and runoff. The impact can be mitigated however, by intercepting the drainage water with underdrains and careful disposal or evaporation of the captured drainage water. The cost for underdrainage and drainage water disposal systems were not developed nor included in estimated treatment costs for the Agricultural Irrigation alternatives (see Section III. E.5, page 213). If effluent disposal by agricultural irrigation or complete retention are pursued and the TDS and nitrogen build-up are of concern to surrounding land owners, the price of adequately designed and operated drainage water collection and disposal systems should be added to the overall consideration for the City's own liability protection. These added costs may place agricultural irrigation and complete retention in a different ranking.

(12) The cost of shelter belt planting to trap spray irrigation aerosols which may carry pathogenic organisms have also been excluded from the overall treatment costs.

Re: Waste Treatment Facilities
Scottsbluff, Nebraska

(13) We feel that the report made a favorable point for industrial wastewater pretreatment through sewer use ordinance and user charges. We have worked with both municipal and industrial clients in developing such ordinances that were agreeable to both parties and are available to discuss this matter further with you.

(14) We feel that the Regional Treatment theories did not address any of the practical items that the City will be left to administer, such as assignment of liability for effluent quality or non-compliance, methods of inter-government ownership and operation, formation of a wastewater utilities district, and resolution of political differences.

Please let us know if there are any specific items in the EIS you would like to have us review in more detail. We would like to meet with you in Scottsbluff the afternoon of Thursday, April 6, or the next morning to discuss this project. We will call you by April 3 to see which of these dates is more convenient and confirm an appointment with you.

Very truly yours,

BELL, GALYARDT AND WELLS, INC.

W. Scott Rynearson

W. Scott Rynearson, P.E.
Associate

WSR:csl

City of Scottsbluff
Nebraska
69361

RECEIVED
AUG 21 1978
ENGINEERING BRANCH
WATER DIVISION

August 11, 1978

TO: THE HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL

FROM: Frank U. Koehler, City Manager

RE: Proposed Expansion of Existing Wastewater Treatment Facilities-
Environmental Impact Statement

This report is presented to Council in order to provide additional information on the options facing the City with regard to updating the City's sewer treatment facilities so that Council may authorize a response to the U. S. Environmental Protection Agency and the Nebraska Department of Environmental Control on those options. The information in this report is based on discussions with representative of the EPA and DEC as well as the City's engineers, the Water and Sewer Superintendent and other interested persons.

Possible Action by Council

As discussed in greater detail in the report the City has the following basic options to choose from:

1. Advise EPA that the City prefers Alternative CRV, Complete Retention at a Valley site,

2. Advise EPA that the City prefers Alternative S.D. 4, maximum industrial pre-treatment, including anaerobic lagoons adjacent to Flanery Foods, dissolved air flotation or microscreening by City,

3. Advise EPA that the City prefers Alternate S.D. 3, industrial pretreatment, aerobic lagoons including an aerated lagoon, with clarification by either dissolved air flotation or microscreening.

4. Advise EPA that City prefers Alternative S.D. 3 but would consider R.S.D. 2, which includes a provision for regional cooperation with Gering on the microscreening or dissolved air flotation clarification of the effluent if a favorable cost ratio could be established.

As noted in the summary of options above, the City has four basic options available to it at this time. These have been set forth based on the elimination of two other options, included in the discussion below, as not being viable.

As Council will recall, when representatives of the City and its engineers met with representatives of the EPA and DEC on July 17, the City was presented with additional information to supplement the data submitted in the draft environmental impact statement. The draft as supplemented by verbal comments on July 17 which were confirmed in writing on August 1, clearly indicates that several of the alternatives being considered by the Consultant were not available to the City at the present time because they are not considered to be cost effective. These included the agricultural irrigation alternative which had previously been considered quite favorably by the City because of its potential for utilization of the fertilizer value of the treated effluent as well as the potential for economic returns to offset the cost of operation of the system. Therefore, this particular alternative is not included in this report as a viable option for adoption by the City at this time. It should be noted, however, that all of the other options presently available to the City are sufficiently flexible to permit future decisions permitting the use of part or all of the City's effluent in agricultural irrigation. Depending on which option were selected, varying amounts of capital investment being made at this time would have to be considered expendable in order to make the changeover.

In addition, the City theoretically would have the option of not accepting any of the currently available options and ask for additional funds for further studies, etc. As a practical matter, however, this would continue the City in violation of the effluent standards currently required by the State and would specifically violate the City's stream discharge permit. Although the DEC has been very reasonable with the City in applying its standards and regulations, DEC would have no alternative except to place a complete moratorium on construction which would have serious adverse impact on the local economy. Therefore, this has also not been considered as a viable option available to the City.

Review of the Basic Options

Review of the basic options that remain indicated several pros and cons for each alternative. These are reviewed in some detail below:

Alternative CRV - Complete Retention, Valley site

Pro: The considerations for this alternative include the fact that the operating and maintenance costs will be comparatively low, there probably will be no effluent to the river in which case no stream discharge permit or testing program would be required and there would be limited future capital costs except for expansion to meet growth requirements after the plant's capacity has been attained. In addition, conversion to an agricultural irrigation program would not sacrifice any significant capital investment. This method might be eligible for 85% Federal Funding as an innovation process, thus reducing local costs. (Adjusted cost over 20 year life is 29.05¢/1,000 gallons).

Con: On the other hand, the City can and should anticipate that any proposal to acquire approximately 800 acres of land in the valley for a complete retention system would raise all of the arguments and emotions that were raised by the agricultural irrigation system proposals north and south of the City. In addition, a pond area of that scope, in addition to the present facility, would add to the possibility of odor complaints whether or not the facility is actually causing such problems. Discussions with the engineers indicate concern that the lagoon leakage might be such that the City would be required to install a "curtain drain" system and possibly drain the water pumped from the curtain drain system back to the river. If that occurs the City would have to obtain a stream discharge permit and maintain a testing program after all. Such a system would set aside an undesirably large area of land (presumeably currently in some agricultural use) for a non-productive use. Weed control would be an additional potential problem and grease handling might be a problem depending on the success of industrial pre-treatment although none is specifically proposed in the cost figures included in the draft Environmental Impact Statement. The City would pay 100% of land costs.

Alternative S.D. 4, Maximum Industrial Pre-Treatment, City Clarification

Pro: Low initial construction cost by City and lowest cost per thousand gallons based on computed figures for 20 year life of system (Adjusted cost is 22.0¢/1,000 gallons).

Con: Requires construction of an anaerobic lagoon at Flanery Foods which would create a potential for a serious odor problem immediately adjacent to a residential neighborhood. Proposal includes potential use of chemicals by both the City and Flanery which, based on past experience with chemical costs, provides an area for cost escalation not considered in the EIS. Proposal also calls for a high initial investment by Flanery Foods which might adversely affect the company's operation in the Scottsbluff economy. Whether the proposal included dissolved air flotation or microscreening consideration should be given to evaluation of one or both options with a pilot plang. EPA letter of July 7 raises question as to whether proposed system would adequately treat sewage. If aeration has to be added cost would increase to 28.5¢/1,000 gallons.

Alternative S.D. 3, Upgrade lagoons, Some Industrial Pre-treatment and Clarification by City

Pro: Existing facility can be upgraded (new pumping capacity, aerated lagoon, etc.) while evaluation of clarification systems (microscreening or dissolved air flotation) are tested through a pilot plant. This would be a versatile design which could be revised as standards or needs require. Use of the aerated lagoon minimizes potential for odor problems. (Adjusted cost is 29.7¢/1,000 gallons).

Con: Decision to proceed on this approach would, at least for the short term, commit the City to use either microscreening equipment or dissolved air flotation for clarification of the effluent. Operation and maintenance costs are higher than complete retention. The danger of those costs escalating excessively is greater with dissolved air flotation than with microscreening. Sludge handling will be a problem which will have to be adequately engineered as a result of pilot plant studies. Dissolved air flotation would require a more highly trained and qualified maintenance person and, therefore, higher priced staff than would probably be the case if microscreening were selected. (Adjusted cost is 30.02¢/1,000 gallons).

Comment: If this alternative were selected such selection would be based on including a pilot plant study of microscreening as a part of the design process. As noted in Mr. Walker's letter (see attachment), such a pilot plant would probably be operated on the Gering facility either by the City of Gering or jointly by the two cities. Based on previous experience of the City's Water and Sewer Superintendent the staff had, at one time, some hesitancy as to the practicality of microscreening. However, the new materials currently available in the industry would appear to overcome most of the problems which previously existed. If the pilot plant proves the effectiveness of the system it is anticipated that microscreening would probably be more economical in the future, assuming that past trends in chemical and power costs were to continue. This alternative may be eligible for 85% Federal Funding.

Alternative R.S.D. 2, Regional Version of S.D.3

Pro: In addition to bhe favorable comments above, it would appear that there ought to be some personnel and facility maintenance cost savings over the life of the facility. Although the EIS does indicate some cost differential between the cities providing this service separately rather than jointly the historic pattern of inflation projected into the future would indicate that there could be cost savings to both Gering and Scottsbluff if this were pursued.

Con: The same comments as for S.D. 3 apply. A formula for cost sharing would have to be negotiated between the two cities. However, this is not anticipated to be an insuperable task. In addition, the joint project would be faced with meeting the Corps of Engineers requirements for the main crossing the river. Again, this should not be an insuperable problem. (Adjusted cost is 36.5¢/1,000 gallons).

Comment: This alternative may be eligible for 85% Federal Funding. Although there is some differential in average cost between the regional approach and the separate approach, much of that cost is in the Federal share. EPA advises that the local share would probably vary between approximately 23 cents and 25 cents per one thousand gallons of sewage. This would probably justify serious evaluation of the regional alternative.

General

In addition to selecting a preferred option, the City must advise EPA of the preferred method of rerouting the Airport Sanitary Sewer. The EIS indicated that perhaps no change would be necessary. However, by bringing the sewer west in the County Road located south of East Overland extended as suggested in the facilities plan the City would (1) eliminate a lift station, (2) collect all sewage at a central point and (3) make sewer available to more property without additional cost.

The City must also obtain clearance from the U. S. Fish and Wildlife Service as well as from the Nebraska Historical Society as part of Step I. The final Step I process would then be another public hearing - this time on the alternative selected by Council at this time.

Council's consideration and questions are requested.

Respectfully submitted

Frank M. Koehler

Frank U. Koehler
City Manager

FK/mw

City of Scottsbluff
Nebraska
69361

RECEIVED
AUG 21 1978
ENGINEERING BRANCH
WATER DIVISION

August 16, 1978

U S Environmental Protection Agency
1735 Baltimore
Kansas City, Missouri 64108

Attn: Mr. Paul M. Walker, Chief, Engineering Branch Water Division

Re: **Scottsbluff** Wastewater Treatment Facility

Dear Mr. Walker:

The City Council, at its regular meeting on Monday, August 14, 1978, reviewed the information which you presented to the Council on July 17, the information in your letter of August 1, 1978 and additional information provided by the City Staff and its engineers.

Based on that information the City Council has made the following decisions:

1. Selected SD3 as its preferred alternative with clarification to be performed either by microscreening or dissolved air flotation.

2. Affirmed a willingness to cooperate with the City of Gering in the operation of a pilot plant on the microscreening approach to clarification. It is our assumption that such a pilot plant would be funded by EPA as an innovative venture involving 85% EPA funds.

3. Indicated a strong desire to operate the clarification system jointly with Gering assuming that it can be shown to be of mutual benefit to the two communities.

4. Determine that the preferred location for the connecting line from the present airport Sanitary sewer to the City pump station be located in a County road north of the present lagoon system as shown in the original proposal by Bell, Galyardt and Wells.

5. Set September 25, 1978 at 8:30 P.M. as the public hearing on the proposed project.

For your information I am enclosing a copy of a report submitted to the Council by the Staff which clearly indicates the unsuitability of SD4 as an alternative for the City.

Sincerely yours

Frank U. Koehler

Frank U. Koehler
City Manager

FK/mw

enc.

cc: The Ne Dept of Environmental Control
City of Gering
Bell, Galyardt and Wells
WAPORA, INC.
Tim St Onge
W. L. Ferguson, City Clerk

City of Gering
County Seat of Scotts Bluff County
Gering, Nebraska

April 18, 1978

Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Dear Sirs:

I'm taking this opportunity to reaffirm the City of Gering's position relative to the EPA's Draft Environmental Impact Statement (December 1977).

I wish to make the following written comments relative to our position on the study and its alternatives. (1) The land acquisition costs stated in the alternatives are not consistent with the actual acquisition costs that would be incurred if either total retention or dissolved air floatation facilities required additional land acquisition. Quite frankly these assumed costs could be as much as 700% too low for irrigated land prices as quoted in the statement. (2) Ramifications of some of the proposed systems are not adequately dealt with in the study. The final choice of a facility is a long term investment in our community and therefore our local input should weigh heavily in the decision as to what best will handle our need for compliance and also what best will be equitable for our needs. We hope a decision from your agency on the type of facility will not be one that forces us to build something we cannot feel will be equitable or conducive to our long term needs in planning. (3) Any alternatives not mentioned in the statement should also have a feasibility decision available to us or be permitted to be studied for recommendation to us by a qualified Engineer. (4) Cost efficiency for maintenance and operation over a long term should be predominate in the final selection of a facility for our City and that decision not just based on the initial construction cost. (5) We are concerned that any decision on a facility will take into consideration the possibility of future changes in the affluent qualities that our system will discharge for all pollutants. (6) We hope that any decision on a facility will not be one that causes an undue economic hardship on our community.

I have also enclosed copies of letters that we have received from our present Engineering firm, Bell Galyardt and Wells, and also from a concerned citizen who is also an Engineer who has expressed concerns that appear to him in this study. We hope these comments and those above will be of assistance in making a fair and equitable decision on the future wastewater treatment for the City of Gering, Nebraska.

Sincerely,

John McLellan, Jr., Mayor

JM/ckk

City of Gering
County Seat of Scotts Bluff County
Gering, Nebraska

17 April 1978

United States Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Attn: Mr. Ralph Flournoy

Gentlemen:

Transmitted herewith on behalf of the City of Gering, are comments regarding the "Draft Environmental Impact Statement for Proposed Expansion of Existing Wastewater Treatment Facilities" - December, 1977, from two concerned Nebraska citizens and our engineering consultant for Step I, and Mr. John McLellan, Jr., the Mayor of the City of Gering. The City feels the attached comments and questions warrant much further investigation on behalf of EPA prior to a final decision on a wastewater treatment system.

The City of Gering is available to discuss the attached comments with EPA and Wapora as soon as possible in an effort to reach a final decision.

Very truly yours,

CITY OF GERING, NEBRASKA

Richard J. Kroon

Richard J. Kroon
City Administrator

RJK/ckk

CC: File

RECEIVED

APR 24 1978

ENGINEERING BRANCH
WATER DIVISION

bell
galyardt
wells

architects
engineers

April 10, 1978

Reply to: Omaha

Honorable John McLellan
Mayor
City of Gering
City Hall
Gering, Nebraska 69341

Re: Waste Treatment Facilities
Gering, Nebraska
BGW No. 750908

Dear Mr. McLellan:

This letter is to provide you with our review comments on EPA's Draft Environmental Impact Statement (December, 1977) which we discussed with you in your office on the afternoon of April 6, 1978.

As we indicated to you at that time, we feel that the EIS was fairly objective for having included the large number of treatment alternatives that it did. It still contained enough inaccuracies, that if corrected, could change the ranking or desirability of some of the alternatives. We feel that no one alternative was shown to have a clear cut advantage in terms of cost or environmental impact. The method of treatment to be constructed should still be the decision of the tax payers and sewer customers through their elected representatives and consulting engineer.

Stated more specifically, we had the following comments and observations after reviewing the draft EIS for the City of Gering.

(1) The design and cost estimates for the treatment alternatives were done after a series of assumptions were made about waste flows, industrial waste management practices, linear population growth projections, and others. The treatment alternative that is finally adopted should be one which can be easily altered or expanded to allow for future variance or even radical departure from the original design parameter assumptions.

(2) We agree with the tendency of the EIS to favor the retention and maximum utilization of existing waste treatment facilities and sites.

(3) The initial assumptions about obtaining a theoretical treatment plant site may not always be practical or cost effective when actual construction is reached. It is much easier to assume the availability of a theoretical site at a fair market price in

1025 Jackson Blvd
Rapid City SD [illegible] 57701
[illegible]

117 So. 2nd Street
Douglas Wyoming 82633
[illegible]-5220

[illegible] 55th Street
Omaha, Nebraska 68127
[illegible]

order to expedite a report, than to actually obtain it from its owner. In the case of the Valley Irrigation and Complete Retention alternatives, the theoretical site may never become available in the desirable area, so therefore, the entire treatment option, as assumed, becomes invalid.

(4) National or State pricing sources, even though they are documented, do not necessarily make them accurate for local conditions in Gering. One example of this is the erroneously low land prices of $120 and $150 per acre quoted on appendix page P-5 in the EIS. With the numerous assumptions made in the EIS, we believe that other such pricing errors will be obvious to the local residents of Gering.

(5) The EIS reports the maximum percolation rate allowed by the State of Nebraska to be 1/8" per day on page 148 and 1/4" per day on page 149. This is most likely a typographical error. Our Facilities Plan of November, 1977, used 1/8" per day for computing losses from complete retention ponds and storage lagoons.

(6) The EIS discusses hydraulic management and assumes that sugar beets will be irrigated at a uniform rate over a 5 month period, but does not discuss managing or varying the nutrient application during the different growth stages of sugar beets.

(7) Crop selections were heavily weighed toward "boron tolerant" crops, yet the EIS states that the boron concentrations in the theoretical irrigation water are only widely varying estimates and that prior to implementing agricultural irrigation with waste water, further sewer system monitoring and investigations should be undertaken to locate and control the source of boron. This could possibly be done during the implementation of an industrial waste ordinance by the City of Gering. If the source of boron is to be stopped before irrigation as the EIS suggests, then other crops should have also been considered on the basis of their desirable features.

(8) Will the boron concentration factor in the field be the same as that for the TDS as assumed, and is it known from other installations or shown through literature review what removal or loss of boron will occur through lagoon treatment and irrigation storage (pp. O-4 and O-5)?

(9) The EIS reports that TDS, nitrogren and sediment runoff will have an adverse effect on groundwater quality, surface water quality and aquatic biota from the complete retention alternates through percolation and from irrigation through percolation and runoff. The EIS then states that the impact can be mitigated however, by intercepting the drainage water with underdrains and careful disposal or evaporation of the captured drainage water. The cost for the underdrainage and drainage water disposal systems are admittedly not developed nor included in estimated treatment costs for the Agricultural Irrigation alternatives (see Section III, E-5, page 213). If effluent disposal by agricultural irrigation or complete retention is pursued and the TDS and nitrogen build-up is to be avoided, the price of adequately designed and operated drainage water collection and disposal systems should be added to the overall cost to protect the City from possible legal action. These added costs may place agricultural irrigation and complete retention in a different ranking. Furthermore, the EIS did not address the possible long range effect that TDS or nitrogen might have on the need for further treatment of the waste water before it can be used for irrigation.

(10) The EIS predicts the possibility of pathogenic organisms surviving in the aerosol drifts or spray irrigation systems, but says that shelter belt planting would intercept and stop the drift from reaching neighboring land. Yet the cost of shelter belt planting was not included in the overall treatment costs for any of the spray irrigation options.

(11) We feel that the report made a favorable point for industrial wastewater pretreatment and cost recovery through sewer use ordinances and user charges. Reduction in the strength of industrial waste by the industry will help reduce the size of municipal facilities required. We have worked with both municipal and industrial clients in developing such ordinances that were agreeable to both parties and are available to discuss this matter further with you.

Re: Waste Treatment Facilities
Gering, Nebraska - BGW No. 750908

(12) We feel that the Regional Treatment theories did not address any of the practical items that the City would be left to administer, such as assignment of liability for effluent quality or non-compliance, methods of inter-governmental ownership and operation, and the possibilities for forming a wastewater utilities district.

Please let us know if there are any specific items in the EIS you would like to have us review in more detail.

Very truly yours,

BELL, GALYARDT AND WELLS, INC.

W. Scott Rynearson

W. Scott Rynearson, P.E.
Associate

WSR:csl

cc: Richard J. Kroon
City Administrator

APR 24 1978
ENGINEERING BRANCH
WATER DIVISION

Re: Gering, Nebraska

April 17, 1978

Mr. Richard J. Kroon
City Administrator
City of Gering
Gering, Nebraska 69341

Dear Mr. Kroon:

The following are personal comments of W. James Wells, Jr. and myself regarding the "Draft Environmental Impact Statement for the Proposed Expansion of Existing Wastewater Treatment Facilities at Scottsbluff, Gering, and Terrytown, Nebraska" (EIS).

A. Pages 121 through 125 and Pages G-5 through G-8, Industrial Design Loadings.

On page G-6 of the EIS, Wapora states that there is a considerable quantity of clean cooling water being discharged to the sanitary sewer from Swift & Company. Undoubtedly this fact is true and cooling water should be discharged to storm sewers or recycled back through plant processing. If the discharge of cooling water can be eliminated, the present process water consumption rate can be reduced by 36 percent according to Wapora. This represents a substantial reduction in water use. Our concern on this point is that Swift & Company is in the process of selling its slaughter operation to another company and we wonder if the new owner will be willing and able to practice the water and waste conservation measures assumed by Wapora.

On page G-7 of the EIS, Wapora presents projected wastewater loadings for Stanko Packing. These projections are developed by increasing the loadings sampled and measured for in April-May, 1976, in direct proportion to projected LWK. Our experience in the red meat industry indicates that unit loadings do not generally increase in direct proportion to an increase in LWK. In our opinion, the projected waste loadings in Table G-3 are too high and they should be reduced to at least the level determined in April and May, 1976. The projected waste loads by Wapora are considerably higher than those developed by BGW.

B. Page 126 - Industrial Pretreatment.

Table III-5 illustrates anticipated reductions in raw meat packing wastewaters by various pretreatment systems. Our only comment is in the area of oil and grease. In our opinion, [illegible]0% grease removal through fine screening is not obtainable.

B. Continued.

The percent grease reduction should probably be in the area of 25-30%. Grease removal of 84% for fine screening and DAF is also too high in our opinion. A more realistic and consistent removal percentage for grease is 55-60%, with perhaps 70-80% with chemical addition. We have considerable experience with wastewater pretreatment for the red meat industry and can substantiate our recommendations with operating data.

C. Costs to Industry.

The EIS does not address the costs private industry must face in terms of industrial cost recovery and user charge. Industry should know at any early stage in the project, all costs it will be responsible for.

D. Complete Retention Pond Valley.

1. Land Costs - Page P-5.

Wapora has used a land cost of $150 per acre for pasture land in the CRV alternative. A much more realistic cost figure is $300 per acre for permanent pasture land. To confirm this land price, Wapora should contact realtors in the Scottsbluff-Gering area.

2. Retention Pond Costs - Page Q-13.

In our opinion, Wapora's estimated construction cost presented for the complete retention pond of $1,577,000 is much too low. To be able to fully evaluate their cost, the following information should be requested from Wapora:

a. The estimated earthwork volume required for excavation and embankment and the price per cubic yard used.

b. There is no question bentonite will be required to seal the lagoon bottoms to control percolation to the groundwater. The bentonite application rate and cost per acre should be requested.

c. It is not entirely clear to us if the cost of riprapping the interior dikes of the retention ponds is included in the cost of the ponds. The complete retention ponds must have dike protection from wave action. Wapora should be asked to present the cost figures utilized in computing construction costs for riprap if such costs were figured.

D. Continued.

d. The construction cost estimate does not appear to include money for site improvements such as fencing, seeding, drainage structures, and access roads. These costs must be included as they will amount to a substantial dollar figure.

e. It is interesting to point out that Wapora uses a construction cost of approximately $9,200 per acre for the irrigation storage ponds at the North Site regarding Scottsbluff and Gering, but a cost of only $4,600 per acre for complete retention. Wapora should be asked to justify these differences in cost.

E. Dissolved Air Flotation.

1. Winter Storage - Page 157.

It does not appear Wapora is providing for winter storage of wastewater in conjunction with DAF. Winter storage is absolutely necessary. During cold winter weather, the symbiot relationship between bacteria and algae in lagoons is slowed by cold temperatures resulting in reduced treatment removal efficiency of soluble BOD. As a result, the combined efforts of lagoon treatment and DAF in the winter cannot reduce the soluble fraction of the BOD to the level required in the NPDES Permit. For this reason, DAF for algae removal must include approximately 4 months of winter storage.

2. Aerated Lagoon Domestic Waste - Page 157.

In our opinion, Wapora's idea of utilizing an aerated lagoo in lieu of a waste stabilization pond for domestic waste (as proposed by BGW) is very sound, due to the limited availabilit of land in the vicinity of the existing waste treatment plant.

3. Aerated Lagoon Costs - Page Q-18.

In our opinion, the total cost of the domestic aerated lagoon of $254,000 is excessive. Wapora should be asked for a detailed breakdown on excavation and bentonite costs, total cost of aerators, and cost of air blowers.

F. Microscreening.

1. Theory.

There is one other treatment system for algae removal tha deserves some in-depth attention. This treatment system utili a microscreen to remove algae. Microscreens are cylinder sh

F. Continued.

with as small as a 1 micron size stainless steel screen enclosing its outer circumference. Wastewater enters the open end of the cylinder and flows outward through the 1 micron size screen. Algae is retained on the inside surface of the screen while the wastewater passes through and is discharged to the outfall line. Algae retained on the inside of the screen is washed off the screen and is discharged to a hopper and taken from the site. Performance data of several microscreening operations is provided at the end of this letter.

2. Description of Flow Schematic.

A flow schematic of the microscreen operation is attached at the end of this letter for reference. As shown on the sketch, the microscreening schematic will include treatment of all industrial waste at the existing treatment plant, while all domestic waste will be treated in a new aerated lagoon. The combined industrial and domestic waste will then flow to a 90 to 100 acre winter storage pond as discussed previously for DAF. From the storage pond, the algae laden water will be processed through the microscreens for algae removal. Algae removed will be pumped back to the anaerobic lagoons for digestion. Since the algae are organic, the anaerobic lagoons will easily digest the material and will not add an appreciable BOD loading.

3. Microscreening vs. DAF.

Microscreening has the following advantages over DAF:

a. Microscreening does not require chemical addition as compared to DAF for algae removal. As a result, microscreening will not have operation and maintenance costs for chemicals where DAF will. Chemicals are very costly and a substantial savings in chemical costs can be realized by utilizing microscreening.

b. Microscreening is much simpler to operate as compared to DAF because the process control parameters are less complex. As a result, less manpower is required to operate microscreening and more consistent treatment efficiencies can be achieved.

c. Microscreening equipment is physically less complex than the DAF equipment resulting in less maintenance costs.

F. Continued.

d. As described earlier, the microscreen algae sludge can be disposed of in the existing anaerobic lagoons. The algae sludge from DAF, however, cannot be discharged to the lagoons due to the chemicals utilized to remove algae such as alum, polymer, acids, etc. These chemicals, if discharged to the anaerobic lagoons, will upset the digestion process. As a result, microscreening will not have sludge handling and hauling costs associated with it as in the case of DAF.

The advantages outlined above are futher illustrated in the cost analysis provided at the end of this letter.

Microscreening has the following disadvantage:

The capital cost of the microscreens is somewhat more than the DAF system. This difference though is offset over a period of years by the relatively less expensive operation and maintenance costs of the microscreens.

G. Cost Effective Analysis (Cost Analysis Presented at End of Letter).

Three treatment systems have been evaluated in terms of total project costs, operation and maintenance costs, and salvage value: microscreening for algae removal, DAF for algae removal and complete retention. Complete retention and DAF were the two most cost effective treatment schemes developed by Wapora. The costs for the various treatment schemes are attached at the end of this letter.

The most cost effective treatment scheme is microscreening for algae removal, with DAF second most cost effective. This is a different result from that concluded by Wapora. However, as outlined herein, we have considerable questions on the methodology used by Wapora in developing costs which hopefully can be answered.

Please feel free to enclose our comments in a letter the City of Gering may wish to send to EPA commenting on the Environmental Impact Statement.

Very truly yours,

W. James Wells, Jr.

W. James Wells, Jr.

Charles A.

ESTIMATED CONSTRUCTION COSTS

MODIFICATIONS TO EXISTING FACILITIES
MICROSCREENS & DAF

GERING, NEBRASKA

	LIFE YEAR'S	PLAN "A"		PLAN "B"	
		Cost	Salvage Value	Cost	Salvage Va
Modifications to Existing Inlet Structures	20	$ 30,700	$ 0	$ 30,700	$ 0
Modify Existing Lift Station	20	63,800	0	63,800	0
New Flow Measurement Equipment	20	12,000	0	12,000	0
New Piping, Manholes, and Control Structures	40	120,500	60,300	98,700	49,400
Existing Lagoon Erosion Protection	40	78,000	39,000	78,000	39,000
New Aeration Equipment	20	162,600	0	116,800	0
New Operations Building	20	102,500	0	102,500	0
New 14-Inch Domestic Force Main	40	66,000	33,000	66,000	33,000
New Domestic Aerated Lagoon & Equipment	20	150,000	0	150,800	0
Site Improvements	40	67,000	33,500	67,000	33,500
Electrical	20	31,700	0	29,000	0
Mechanical	20	18,300	0	18,300	0
SUBTOTAL		$903,100	$165,800	$833,600	$154,900
Contingencies (10%)		$ 91,000		$ 84,000	
ESTIMATED CONSTRUCTION COST OR CONSTRUCTION SALVAGE VALUE		$994,100	$165,800	$917,600	$154,900

ESTIMATED ANNUAL OPERATION AND MAINTENANCE COSTS

MODIFICATIONS TO EXISTING FACILITIES
MICROSCREENS & DAF

GERING, NEBRASKA

		PLAN "A"	PLAN "B"
1.	Electrical Power	$ 39,600.00	$ 38,600.00
2.	Mechanical Repairs and Equipment Replacement	9,100.00	8,100.00
3.	Labor and Supervision	8,000.00	8,000.00
4.	Dike Protect and Maintenance	1,500.00	1,500.00
TOTAL ANNUAL O & M COSTS		$ 58,200.00	$ 56,200.00

ESTIMATED CONSTRUCTION COSTS

MICROSCREENING FOR ALGAE REMOVAL

(Does Not Include Modifications to Existing Facilities)

		LIFE YEARS	MICROSCREENING GERING	
			Cost	Salvage Value
1.	New Industrial Lift Station	20	$ 57,400	$ 0
2.	New 16-Inch Force Main	40	24,000	12,000
3.	New Storage Lagoons	40	691,100	345,600
4.	Piping, Manholes & Control Structures	40	30,000	15,000
5.	New Microscreen Equipment	20	600,000	0
6.	New Microscreen Building	40	148,000	74,000
7.	New Algae Sludge Lift Station and 8-inch Force Main (8000 ft)	20	84,000	32,000
8.	New Outfall Line	40	44,400	22,200
9.	New Laboratory Equipment	20	40,000	0
10.	Site Improvements	40	85,000	42,500
11.	New Lift Station to Microscreen Facility	20	65,000	0
12.	Electrical	20	60,000	0
13.	Mechanical	20	16,700	0
14.	Groundwater Dewatering	20	70,000	0
	SUBTOTAL		$2,015,600	$543,300
	Contingencies (10%)		$ 201,600	
	TOTAL ESTIMATED CONSTRUCTION COST OR CONSTRUCTION SALVAGE VALUE		$2,217,200	$543,300

ESTIMATED ANNUAL OPERATION AND MAINTENANCE COSTS

MICROSCREENING FOR ALGAE REMOVAL

(Does Not Include Modifications to Existing Facilities)

GERING, NEBRASKA

		MICROSCREENING GERING
1.	Electrical Power	$ 10,000
2.	Mechanical Repairs and Equipment Replacement	8,000
3.	Labor & Supervision	7,000
4.	Dike Protection and Maintenance	4,500
		$ 29,500

TOTAL ESTIMATED PROJECT COST

MICROSCREENING FOR ALGAE REMOVAL

GERING, NEBRASKA

	PLAN "A"		PLAN "B"	
	Cost	Salvage Value	Cost	Salvage Va
1. Modifications to Existing Facilities at Gering	$ 994,100	$165,800	$ 917,600	$154,900
2. Microscreens System	2,217,200	543,300	2,217,200	543,300
TOTAL ESTIMATED CONSTRUCTION COST . . .	$3,211,300		$3,134,800	
ENGINEERING, LEGAL AND FISCAL (15%) . . .	$ 481,700		$ 470,200	
SUBTOTAL	$3,693,000		$3,605,000	
Non Irrigated Land Costs (30 Ac)	$ 9,000	$ 9,000	$ 9,000	$ 9,000
Irrigated Land Costs (80 Ac)	$ 152,000	$152,000	$ 152,000	$152,000
TOTAL ESTIMATED PROJECT COST OR SALVAGE VALUE	$3,854,000	$870,100	$3,766,000	$859,200

ESTIMATED CONSTRUCTION COSTS

DISSOLVED AIR FLOTATION (DAF) FOR ALGAE REMOVAL
(Does Not Include Modifications to Existing Facilities)

GERING, NEBRASKA

		LIFE YEARS	DAF GERING	
			Cost	Salvage Value
1.	New Industrial Lift Station	20	$ 57,400	$ 0
2.	New 16-Inch Force Main	40	24,000	12,000
3.	New Storage Lagoons	40	691,100	345,600
4.	Piping, Manholes, and Control Structures	40	30,000	15,000
5.	New DAF Building	40	288,000	144,000
6.	New DAF Building Equipment	20	245,900	0
7.	New Sludge Disposal Equipment	20	114,200	0
8.	New Outfall Line	40	44,400	22,20
9.	New Laboratory Equipment	20	40,000	0
10.	Site Improvements	40	85,000	42,500
11.	New Lift Station to DAF Facility	20	65,000	0
12.	Electrical	20	60,000	0
13.	Mechanical	20	16,700	0
14.	Dewatering of Groundwater	20	70,000	0
	SUBTOTAL		$1,831,700	$ 581,300
	Contingencies (10%)		$ 183,000	
	TOTAL ESTIMATED CONSTRUCTION COST OF SALVAGE COST		$2,014,700	$ 581,300

ESTIMATED ANNUAL OPERATION AND MAINTENANCE COSTS

DISSOLVED AIR FLOTATION (DAF) FOR ALGAE REMOVAL
(Does Not Include Modifications to Existing Facilities)

GERING, NEBRASKA

	DAF GERING
1. Electrical Power	$ 9,500.00
2. Mechanical Repairs and Equipment Replacement	8,800.00
3. Labor and Supervision	8,000.00
4. Dike Protection and Maintenance	4,500.00
5. Chemicals	21,800.00
6. Sludge Hauling	6,300.00
TOTAL ANNUAL O & M COSTS	$ 58,900.00

TOTAL ESTIMATED PROJECT COST

DISSOLVED AIR FLOTATION (DAF) FOR ALGAE REMOVAL

GERING, NEBRASKA

	PLAN "A"		PLAN "B"	
	Cost	Salvage Value	Cost	Salvage
1. Modifications to Existing Facilities at Gering	$ 994,100	$165,800	$ 917,600	$154,9
2. Dissolved Air Flotation System	2,014,700	581,300	2,014,700	581,3
TOTAL ESTIMATED CONSTRUCTION COST	$3,008,800		$2,932,300	
Engineering, Legal and Fiscal (15%)	$ 451,300		$ 440,000	
SUBTOTAL	$3,460,100		$3,372,300	
Non-Irrigated Land Costs (30 Acres)	$ 9,000	$ 9,000	$ 9,000	$ 9,0
Irrigated Land Costs (80 Acres)	$ 152,000	$152,000	$ 152,000	$152,0
TOTAL ESTIMATED PROJECT COST OR SALVAGE VALUE	$3,621,100	$908,100	$3,533,300	$897,2

ESTIMATED CONSTRUCTION COSTS

MODIFICATIONS TO EXISTING FACILITIES - COMPLETE RETENTION

GERING, NEBRASKA

	LIFE YEARS	PLAN "A"		PLAN "B"	
		Cost	Salvage Value	Cost	Salvage V
difications to Existing Inlet Structures	20	$ 30,700	$ 0	$ 30,700	$ 0
odify Existing Lift ation	20	63,800	0	63,800	0
Flow Measurement quipment	20	12,000	0	12,000	0
ew Piping, Manholes, nd Control Structures	40	120,500	60,300	98,700	49,400
xisting Lagoon Erosion tection	40	78,000	39,000	78,000	39,000
ew Aeration Equipment	20	162,600	0	116,800	0
ew Operations Building	20	102,500	0	102,500	0
ew 14-Inch Domestic orce Main	40	66,000	33,000	66,000	33,000
ite Improvements	40	67,000	33,500	67,000	33,500
lectrical	20	31,700	0	29,000	0
echanical	20	18,300	0	18,300	0
SUBTOTAL		$753,100	$165,800	$682,800	$154,900
Contingencies (10%)		$ 75,300		$ 68,300	
STIMATED CONSTRUCTION OST OR CONSTRUCTION ALVAGE VALUE		$828,400	$165,800	$751,100	$154,900

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ESTIMATED ANNUAL OPERATION AND MAINTENANCE COSTS

MODIFICATIONS TO EXISTING FACILITIES - COMPLETE RETENTION

GERING, NEBRASKA

	PLAN "A"	PLAN "B"
1. Electrical Power	$ 25,200.00	$ 24,200.00
2. Mechanical Repairs and Equipment Replacement	5,000.00	4,000.00
3. Labor and Supervision	8,000.00	8,000.00
4. Dike Protect and Maintenance	1,500.00	1,500.00
TOTAL ANNUAL O & M COSTS	$ 39,700.00	$ 37,700.00

ESTIMATED CONSTRUCTION COSTS

COMPLETE RETENTION POND *
(Does Not Include Modifications to Existing Facilities)

GERING, NEBRASKA

	LIFE YEARS	COMPLETE RETENTION GERING	
		Cost	Salvage Value
Pumping Station	20	$ 80,000	$ 0
Transmission	40	120,000	60,000
New Complete Retention Ponds	40 $7132/acre	2,532,000	1,266,000
Piping, Manholes, and Control Structures	40	175,000	87,500
Site Improvements	40	339,000	169,500
Electrical	20	5,000	0
Mechanical	20	3,000	0
SUBTOTAL		$3,254,000	
Contingencies (10%)		$ 325,000	
ESTIMATED CONSTRUCTION COST OR CONSTRUCTION SALVAGE VALUE		$3,579,000	$1,583,000

*Valley Site

355 acres

ESTIMATED ANNUAL OPERATION AND MAINTENANCE COSTS

COMPLETE RETENTION POND
(Does Not Include Modifications to Existing Facilities)

GERING, NEBRASKA

		COMPLETE RETENTION GERING
1.	Electrical Power	$ 6,000.00
2.	Mechanical Repairs and Equipment Replacement	1,000.00
3.	Labor and Supervision	3,000.00
4.	Dike Protection and Maintenance	17,100.00
	TOTAL ANNUAL O & M COSTS	$ 27,100.00

TOTAL ESTIMATED PROJECT COST

COMPLETE RETENTION PONDS

GERING, NEBRASKA

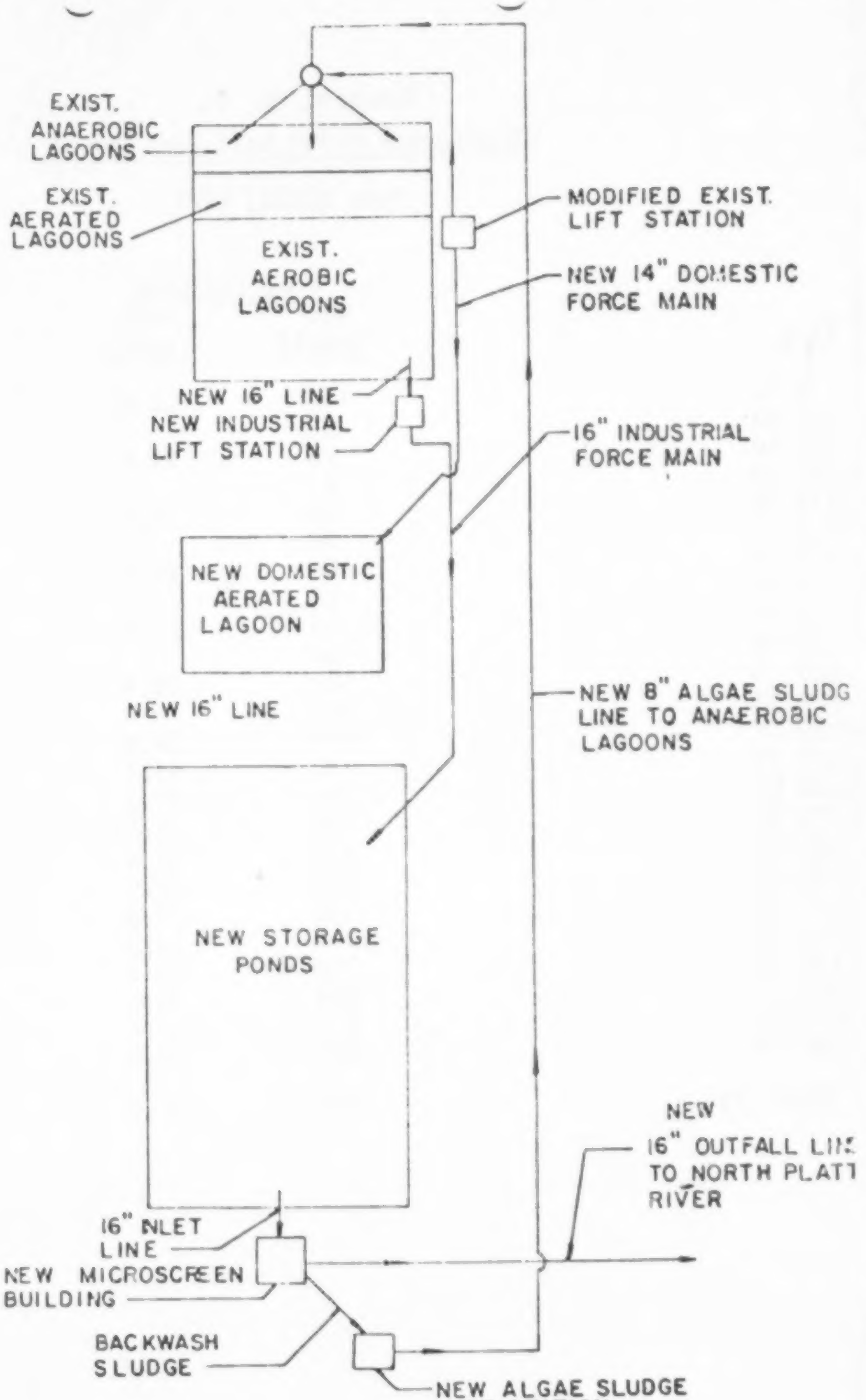
	PLAN "A"		PLAN "B"	
	Cost	Salvage Value	Cost	Salvage V
1. Modifications to Existing Facilities at Gering	$ 828,400	$ 165,800	$ 751,100	$ 154,
2. Complete Retention Pond System	3,579,000	1,583,000	3,579,000	1,583,
Total Estimated Construction Cost	$4,407,400		$4,330,100	
Engineering, Legal and Fiscal (15%)	$ 661,100		$ 649,500	
SUBTOTAL	$5,068,500		$4,979,600	
Land Costs (355 Ac)	$ 106,500	$ 106,500	$ 106,500	$ 106,
TOTAL ESTIMATED PROJECT COST OR SALVAGE VALUE	$5,175,000	$1,855,300	$5,086,100	$1,844,

"A"

COST EFFECTIVE ANALYSIS
PRESENT WORTH BASIS
WASTE TREATMENT ALTERNATIVES
GERING, NEBRASKA

NS	TOTAL PROJECT COST*	OPERATION AND MAINTENANCE COSTS*	SALVAGE VALUE	NET TOTAL COST	RA
screening for Removal	$ 3,854,000	$ 929,100	$ 224,800	$4,558,300	1
lved Air Flotation lrae Removal	$ 3,621,100	$ 1,240,600	$ 234,700	$4,627,000	2
ete Retention gy)	$ 5,175,000	$ 707,700	$ 479,400	$5,403,300	3

ude Modifications to Existing Facilities


EXIST. ANAEROBIC LAGOONS
EXIST. AERATED LAGOONS
EXIST. AEROBIC LAGOONS
MODIFIED EXIST. LIFT STATION
NEW 14" DOMESTIC FORCE MAIN
NEW 16" LINE
NEW INDUSTRIAL LIFT STATION
16" INDUSTRIAL FORCE MAIN
NEW DOMESTIC AERATED LAGOON
NEW 16" LINE
NEW 8" ALGAE SLUDG LINE TO ANAEROBIC LAGOONS
NEW STORAGE PONDS
NEW 16" OUTFALL LI TO NORTH PLATT RIVER
16" INLET LINE
NEW MICROSCREEN BUILDING
BACKWASH SLUDGE
NEW ALGAE SLUDGE LIFT STATION

MICROSCREENING OPTION

Camden, S. C.

Microscreen Pilot Unit Test Run #1

June 23-24, 1977

Time	Pond Effluent		Microscreen Effluent	
	TSS (mg/l)	BOD$_5$ (mg/l)	TSS (mg/l)	BOD$_5$ (mg/l)
:20 PM	110	22.2	16	19.2
:20 PM	80		14	14.4
:20 PM	76	21.6	8	13.2
:20 PM	82		12	13.2
:20 AM	94	22.2	13	14.4
:20 AM	98		13	15.6
:20 AM	100	20.4	13	14.4
:20 AM	90		13	14.4
:20 AM	96	20.4	10	13.8
:20 AM	92		14	12.0
:20 AM	102	20.4	9	12.6
7:20 AM	100		12	13.8
:20 AM	110	28.8	25	21.6
:20 AM	192	44.4	21	16.8
:20 AM	244	49.0	16	13.2
:20 AM	164	45.6	27	14.4
:20 PM	156	32.4	29	21.6
:20 PM	110	36.0	34	21.6
:20 PM	126	39.6	25	19.2
:20 PM	166	42.0	40	16.8
:20 PM	190	40.8	2	15.6
:20 PM	154	30.0	35	14.4
:20 PM	212	37.2	23	14.8
:20 PM	134	39.6	29	15.6
Hour Avg.	128	32.9	19	15.7

Camden, S. C.

Microscreen Pilot Unit Test Run #2

June 26-27, 1977

Time	Pond Effluent TSS (mg/l)	Pond Effluent BOD_5 (mg/l)	Microscreen Effluent TSS (mg/l)	Microscreen Effluent BOD_5 (mg/l)
12:30 PM	52	43.2	32	30.6
1:30 PM	64	42.0	32	28.9
2:30 PM	54	43.2	22	30.6
3:30 PM	50	37.8	28	33.0
4:30 PM	40	40.8	16	33.6
5:30 PM	57	43.2	28	33.6
6:30 PM	82	55.2	18	36.0
7:30 PM	60	37.8	24	34.9
8:30 PM	80	38.4	19	33.6
9:30 PM	86	36.0	12	34.2
10:30 PM	82	28.8	13	28.2
11:30 PM	54	49.8	14	31.2
12:30 AM	68	42.0	11	32.4
11:30 AM	90	40.2	27	28.2
2:30 AM	90	40.2	22	26.5
3:30 AM	100	39.6	24	25.8
4:30 AM	104	33.6	30	26.5
5:30 AM	71	36.0	27	24.6
6:30 AM	69	45.6	29	27.6
7:30 AM	75	41.4	29	26.4
8:30 AM	83	55.8	22	27.6
9:30 AM	67	49.2	24	28.2
10:30 AM	56	44.4	35	31.2
11:30 AM	56	42.0	26	31.2
12:30 AM	85	49.2	21	33.6
25 Hour Avg.	71	42.2	23.4	30.3

MICROSCREEN PILOT UNIT TEST
GREENVILLE, SC
MAULDIN A (GUILDER CREEK)

July 13-21, 1977

Date	Source	Time	Pond Effluent TSS (mg/l)	Pond Effluent T-BOD$_5$ (mg/l)	Microscreen TSS (mg/l)	Microscreen T-BO (mg/
7-13-77	Lagoon Effluent	1:45 pm	74.5	-	34.9	-
7-14-77	Cl$_2$ Contact Chamber	4:00 pm	84.1	64	25.7	28
7-15-77	"	9:30 am	79.6	-	21.8	-
"	"	5:00 pm	57.2	-	20.3	-
7-18-77	"	2:00 pm	106.5	-	19.9	-
7-18-77	"	9:00 pm	99.5	-	22.3	-
7-19-77	"	9:00 am	70.8	58	20.5	10
"	"	2:00 pm	-	-	21.7	
"	"	6:00 pm		-	25.5	-
"	"	10:00 pm	-	-	21.3	-
"	"	6:00 am	-	-	22.9	-
7-20-77	Lagoon Effluent	2:00 pm	106.2	-	22.3	-
"	"	4:00 pm	110	-	26	-
7-21-77	"	11:30 am	138	-	29	-

Data for Continuous operation for 6 day (24 HRS. per day).
Samples listed are random grab samples

MICROSCREEN PILOT UNIT TEST RUN
GREENVILLE, AL
August 8-9, 1977

TIME	POND EFFLUENT TSS (mg/l)	MICROSCREEN EFFLUEN TSS (mg/l)
6:00 pm	37.5	11.5
8:00 pm	-	10.5
10:00 pm	-	10
12:00 am	40	10
2:00 am	-	14
4:00 am	-	12
6:00 am	35.5	14
8:00 am	-	12
10:00 am	37	15

Drum Speed *(variable)*

MICROSCREEN PILOT UNIT TEST RUN

GREENVILLE, AL

August 9-10, 1977

TIME	POND EFFLUENT TSS (mg/l)	MICROSCREEN EFFLUENT TSS (mg/l)	
3:00 pm	Avg.=35 mg/l Pond Effluent	7.2	
5:00 pm		9.2	
7:00 pm		7.2	
9:00 pm		9.6	
11:00 pm		4.8	
1:00 am		8.8	
3:00 am		8.8	
5:00 am		6.8	
7:00 am		12.8	
8:30 am		11.0	M.S. Eff
8:30 am		393.3	Backwash
8:30 am		102.0	Pond Eff (

These Tests Were Performed By Tuscaloosa Testing Lab, Inc.

Drum Speed *(variable)*

MICROSCREEN PILOT UNIT TEST

GREENVILLE, AL

August 16-17, 1977

TIME	DATE	POND EFFLUENT TSS (mg/1)	MICROSCREEN EFFLUENT TSS (mg/1)
3:30 pm	8-16-77	—	15.5
4:30 pm	"	—	13.5
5:30 pm	"	—	16
6:30 pm	"	—	13.3
7:30 pm	"	—	9.3
8:30 pm SHUT DOWN	"	—	12.7
11:00 am	8-17-77	67	17.5
2:00 am	"	70	15

Backwash 11:00 am = 396 mg/1
2:00 am = 608 mg/1

Drum Speed (variable)

MICROSCREEN PILOT UNIT TEST

GREENVILLE, AL

August 17-18, 1977

TIME	POND EFFLUENT TSS (mg/l)	MICROSCREEN EFFLUENT TSS (mg/l)
2:00 pm	--	11.3
4:00 pm	--	5.0
6:00 pm	--	10.6
8:00 pm	--	6.0
10:00 pm	--	5.0
12:00 am	--	4.0
2:00 am	--	8.0
4:00 am	--	6.0
6:00 am	--	5.0
8:00 am	--	6.0
10:00 am	--	7.0
12:00 pm	65	5.0

Backwash = 440 (mg/l)

Drum Speed *(variable)*

DATE	RAW SEWAGE (mg/1)			POND EFFLUENT			MICROSCREEN EFFLUENT			pH
	T-BOD$_5$	TSS	NH$_3$-N	T-BOD$_5$	TSS	NH$_3$-N	T-BOD$_5$	TSS	NH$_3$-N	
July	206	83	-	27	20	18.2				
August	347	32	-	64	28	.5				
Sept.	126	94	11.6	12	35	6.1				
9-28-77 Test Run 1				90	55	3.6	61	23	3.6	
9-29-77 Test Run 2	230	95	8.1	50	78	3.9	28	10	2.8	7-9
9-30-77 Test Run 3				58	69		28	9		
10-1-77 Test Run 4				42	69	3.6	29	9	3.1	

TABLE 1 - COMPOSITE DATA
Adel, Georgia

TABLE I

SUMMARY OF SIDE BY SIDE MICROSCREEN vs PRESSURE FILTER
CONTINUOUS 24 HOUR TEST RUNS
CUMMING, GEORGIA

DATE 1977	MICROSCREEN INFLUENT SOURCE	SUSPENDED SOLIDS, mg/1		
		MICROSCREEN (1) AND PRESSURE FILTER INFLUENT	MICROSCREEN EFFLUENT	PRESSURE FILTER EFFLUENT
8-31/9-1	Clarifier Effluent	44	10	23
9-1/9-2	Clarifier Effluent	32	8	27
9-6/9-7	Polishing Pond Effluent	29	7	21
9-7/9-8	Polishing Pond	27	14	24
9-8/9-9	Polishing Pond	19	4	13
9-9/9-10	Polishing Pond	40	4	22
9-10/9-11	Polishing Pond	28	10	24
9-11/9-12	Clarifier Effluent	21	7	18
9-12/9-13	Clarifier Effluent	28	5	21

SUSPENDED SOLIDS
JONES CREEK TREATMENT PLANT
DICKSON, TENNESSEE

January 1975 thru April 16, 1975

DATE		FLOW	SS mg/l		REMOVAL*
			Influent	Effluent	
Jan.	20	2,131,000	55	7	87%
	23	1,458,000	34	3	91%
Feb.	1	1,492,000	78	5	94%
	6	2,759,000	52	3	94%
	10	1,535,000	50	2	96%
	19	1,334,000	66	3	96%
March	3	1,324,000	58	4	94%
	8	1,063,000	60	5	92%
April	9	1,156,000	32	4	88%
	13	Approx. 1 MGD	62	1	98%
	16	786,000	60	1	98%

September 1975 thru November 1975

DATE		FLOW	SS mg/l		REMOVAL*
			Influent	Effluent	
Sept.	4	694,000	208	2	99%
	9	661,000	348	2	99%
	12	844,000	122	3	98%
	16	629,000	134	2	99%
	19	775,000	164	2	99%
	22	817,000	100	1	99%
	27	973,000	96	2	98%
	30	761,000	116	2	98%
Oct.	2	716,000	160	1	99%
	4	685,000	108	2	98%
	6	697,000	148	1	99%
	8	761,000	102	2	98%
	10	658,000	144	2	99%
	14	663,000	148	1	99%
	21	1,347,000	96	10	89%
	23	1,018,000	52	2	96%
	25	1,106,000	86	4	95%
	28	912,000	102	2	98%
Nov.	1	766,000	80	3	96%
	4	706,000	96	1	99%
	6	804,000	88	5	94%
	8	774,000	82	4	95%
	11	973,000	100	2	98%
	15	759,000	176	2	98%
	22	666,000	176	2	98%
	26	642,000	192	2	99%

These tests done with only one (1) microstrainer in operation.

Microscreens use 21 micron polyester screening media. Plant operates as a complete mix activated sludge process and does not have primary treatment.

*Overall plant suspended solids removal, feed to microscreen varied from 20 to 30 mg/l.

JONES CREEK SEWAGE TREATMENT PLANT
DICKSON, TENNESSEE

SUSPENDED SOLIDS FOR MAY - JUNE - JULY, 1977

DATE		INFLUENT	FINAL EFFLUENT
May	2	120	7
	4	96	1
	6	38	2
	9	46	6
	12	84	3
	16	64	2
	18	80	3
	20	104	4
	24	88	3
	26	72	4
June	3	94	2
	13	120	8
	17	132	8
	20	104	8
	29	92	9
July	5	108	3
	8	116	5
	11	80	10
	15	108	3
	21	160	10
	24	104	4
	27	86	2

JONES CREEK SEWAGE TREATMENT PLANT
DICKSON, TENNESSEE

SUSPENDED SOLIDS FOR MAY - JUNE - JULY, 1977

DATE		INFLUENT	FINAL EFFLUENT
May	2	120	7
	4	96	1
	6	38	2
	9	46	6
	12	84	3
	16	64	2
	18	80	3
	20	104	4
	24	88	3
	26	72	4
June	3	94	2
	13	120	8
	17	132	8
	20	104	8
	29	92	9
July	5	108	3
	8	116	5
	11	80	10
	15	108	3
	21	160	10
	24	104	4
	27	86	2

City of Gering
County Seat of Scotts Bluff County
Gering, Nebraska

July 26, 1978

Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Attn: Mr. Paul Walker, Chief
Engineering Branch

Gentlemen:

In accordance with the request of the Environmental Protection Agency on July 17, 1978, the City Council of Gering, Nebraska, is stating their preference regarding a wastewater treatment alternative. The City's preference is to proceed with upgrading the existing lagoon system (including a new aerated lagoon for the domestic waste) followed by some form of algae removal.

The City further wishes to advise EPA that it has requested Wells Engineers, Inc. to prepare a proposal for proceeding with a microscreen pilot plant study to determine the effectiveness of the microscreen scheme on the existing waste lagoon effluent. Our intention is to commence the pilot plant study as soon as possible to take advantage of warm weather yet this summer and fall. The City will be submitting the proposal to EPA and DEC in the very near future for review and will appreciate the regulatory agency's early approval of the document. It is extremely important that the pilot study be initiated yet this summer. Wells Engineers will be in touch with you to coordinate their proposal.

Very truly yours,

CITY OF GERING, NEBRASKA

Richard J. Kroon
City Administrator

RJK:jh

CC: Mr. Nate Bezley, P.E.
Department of Environmental Control

RECEIVED
JUL 28 1978
ENGINEERING BRANCH
WATER DIVISION

Bell
Galyardt
Wells

April 10, 1978

Reply to: Omaha

Honorable Barbara Carpenter
Mayor
Village of Terrytown
Terrytown, Nebraska 69341

Re: Waste Treatment Facilities
Terrytown, Nebraska
BGW No. 751003

Dear Ms. Carpenter:

This letter is to provide you with our review comments on EPA's Draft Environmental Impact Statement (December, 1977) which we discussed with you at the Council Meeting on the evening of April 6, 1978.

As we indicated to you at that time, we feel that the EIS was fairly objective for having included the large number of treatment alternatives that it did. It still contained enough inaccuracies, that if corrected, could change the ranking or desirability of some of the alternatives. We feel that no one alternative was shown to have a clear cut advantage in terms of cost or environmental impact. The treatment method to be constructed should still be the decision of the tax payers and sewer customers through their elected representatives and consulting engineer.

Stated more specifically, we had the following comments and observations after reviewing the draft EIS for the Village of Terrytown.

(1) The design and cost estimates for the treatment alternatives in the EIS were done after a series of assumptions were made about waste flows, industrial waste management practices, linear population growth projections, and others. The treatment alternative that is finally adopted by the Village should be one which can be easily altered or expanded to allow for future variance or even radical departure from the original design parameter assumptions.

(2) We agree with the tendency of the EIS to favor the further use and maximum utilization of existing waste treatment facilities and sites. However, its description and understanding of the basic hydraulic operation of the final clarifier was grossly inaccurate (see Appendix p.M-2). The discharge launder was not designed to drain the entire plant through the final clarifier nor is it possible to do so as the EIS states.

1026 Jackson Blvd.
Rapid City, So. Dak. 57701
Area Code (605) 343-5282

117 So. 2nd Street
Douglas, Wyoming 82633
Area Code (307) 358-[illegible]

5634 So. 85th Street
Omaha, Nebraska 68127
Area Code (402) 331-0321

(3) The initial assumptions about obtaining a theoretical treatment plant site may not always be practical or cost effective when actual construction is reached. It is much easier to assume the availability of a theoretical site at a fair market price in order to expedite a report, than to actually obtain it from its owner. In the case of the Valley Irrigation and Complete Retention alternatives, for joint treatment, the theoretical site may never become available in the desirable area, so therefore, the entire treatment option, as assumed, becomes invalid.

(4) National or State pricing sources, even though they are documented, do not necessarily make them accurate for local conditions in and around Terrytown. One example of this is the erroneously low land prices of $120 and $150 per acre quoted on appendix page P-5 in the EIS. With the numerous assumptions made in the EIS, we believe that other such pricing errors will be obvious to the local residents of Terrytown.

(5) The EIS reports the maximum percolation rate allowed by the State of Nebraska to be 1/8" per day on page 148 and 1/4" per day on page 149. This is most likely a typographical error. Our Facilities Plan of November, 1977, used 1/8" per day for computing losses from complete retention ponds and storage lagoons.

(6) The EIS discusses hydraulic management of joint irrigation options and assumes that sugar beets will be irrigated at a uniform rate over a 5 month period, but fails to discuss managing or varying the nutrient application during the different growth stages of sugar beets.

(7) Crop selections were heavily weighed toward "boron tolerant" crops, yet the EIS states that the boron concentrations in the theoretical irrigation water are only widely varying estimates and that prior to implementing agricultural irrigation with waste water, further sewer system monitoring and investigations should be undertaken to locate and control the source of boron. If the source of boron is to be stopped before irrigation as the EIS suggests, then other crops should have also been considered on the basis of their desirable features.

(8) We question whether the boron concentration factor in the field will be the same as that for the TDS as assumed, and what is known from other installations or shown through literature review about the removal or loss of boron through lagoon treatment and irrigation storage (see pp. 0-4 and 0-5).

(9) The EIS reports that TDS, nitrogen and sediment runoff will have an adverse effect on groundwater quality, surface water quality and aquatic biota from the complete retention alternates through percolation and from irrigation through percolation and runoff. The EIS then states that the impact can be mitigated however, by intercepting the drainage water with underdrains and careful disposal or evaporation of the captured drainage water. The cost for the underdrainage and drainage water disposal systems are admittedly not developed nor included in estimated treatment costs for the Agricultural Irrigation alternatives (see Section III, E-5, page 213). If regional effluent disposal by agricultural irrigation or complete retention is pursued and the TDS and nitrogen build-up is to be avoided, the price of adequately designed and operated drainage water collection and disposal systems should be added to the overall cost to protect the Municipalities from possible legal action by surrounding land owners. These added costs may place agricultural irrigation and complete retention in a different ranking.

(10) The EIS predicts the possibility of pathogenic organisms surviving the aerosol drifts or spray irrigation systems, but says that shelter belt planting would intercept and stop the drift from reaching neighboring land. Yet the cost of shelter belt planting was not included in the overall treatment costs for any of the spray irrigation options.

(11) We feel that the Regional Treatment theories did not address any of the practical items that the Village would be left to administer, such as assignment of liability for effluent quality or non-compliance, methods of inter-governmental

ownership and operation, and the possibilities for forming a wastewater utilities district.

Please let us know if there are any specific items in the EIS you would like to have us review in more detail.

Very truly yours,

BELL, GALYARDT AND WELLS, INC.

W. Scott Rynearson

W. Scott Rynearson, P.E.
Associate

WSR:csl

284

Village of Terrytown

16 Terry Boulevard
GERING, NEBRASKA 69341

Telephone 632-7212

Barbara Carpenter, Mayor

APR 1978
RGAD
REGION VII
EPA

April 19, 1978

Regional Administrator
United States Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Reference: Draft Environmental Impact Statement (E.I.S.) on Waste Treatment Facilities for ScottsBluff, Gering and Terrytown, Nebraska December 1, 1977

Dear Sir:-

The Village Board met with their consulting engineer firm, Bell, Galyardt and Wells, Inc. on April 6, 1978 to discuss the position of the Village of Terrytown regarding it's waste treatment facilities.

The Facility Plan of November, 1977 prepared by Bell, Galyardt and Wells, Inc. indicated Option Number 4, Modification to Existing Facilities with direct discharge to North Platte River to be most cost effective for Terrytown. The Board has reviewed the various options considered in the Draft Document of the E.I.S. on which a public hearing was held March 1, 1978 and has directed me to advise you that the Village of Terrytown reaffirms its position in favor of the aforementioned Option Number 4 and requests that this letter with attachment be included in proceedings of the March 1st Hearing and that this decision be acknowledged in the Final Issue of the E.I.S..

A copy of Bell, Galyardt and Well's letter of April 10th, 1978 confirming their verbal report to us on April 6, 1978 is attached to this letter.

The Board further requests I convey to you that it feels time is of the essence for E.P.A. to accept the decision of the Board of Terrytown and that an application for grant funds to proceed with Step 2 be entertained by E.P.A. and acted upon favorably. We are most anzious to proceed and look foreword to hearing from you.

Respectfully submitted,
VILLAGE OF TERRYTOWN
Barbara Carpenter Mayor
Barbara Carpenter, Mayor

Attachment: Bell Galyardt & Wells letter

CC. Mr. Dan T. Drain, Director
Nebraska Department of Environmental Control

CC. Mr. Scott Rynearson, Associate
Bell, Galyardt and Wells, Inc.

Addendum Number 6

EPA Comment Letter to Cities

Scottsbluff

- Paul M. Walker, Chief, Engineering Branch - letter of 7 July 1978 to Mayor Donald E. Overman
- Paul M. Walker, Chief, Engineering Branch - letter of 1 August 1978 to Mayor Donald E. Overman

Gering

- Paul M. Walker, Chief, Engineering Branch - letter of 10 July 1978 to Mayor John McLellan, Jr.
- Paul M. Walker, Chief, Engineering Branch - letter of 2 August 1978 to Mayor John McLellan, Jr.

Terrytown

- Paul M. Walker, Chief, Engineering Branch - letter of 27 June 1978 to Mayor Barbara Carpenter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
1735 BALTIMORE
KANSAS CITY, MISSOURI 64108

RECEIVED
NOV [illegible]
ENGINEERING BRANCH
WATER DIVISION

July 7, 1978

Scottsbluff, Nebraska
Project No. C310474-01

Honorable Donald E. Overman
Mayor of Scottsbluff
Scottsbluff, Nebraska 69361

Attention: Frank U. Koehler, City Manager

Dear Mayor Overman:

This letter is an attempt to respond to your draft environmental impact statement (EIS) comments and thus allow maximum input by the City. The normal EIS process calls for comments by everyone interested. These comments, written and verbal, are then incorporated into the final EIS. We are therefore lengthening the normal comment period to solicit your final recommendation. We request that your next comment letter contain specific remarks regarding the preferred alternative. We will attempt to reach some agreement regarding this at a meeting to be held July 17, 1978, at 8:30 a.m. in the city offices.

Reply to Letter from Wells and Haas

A. The units loadings for Flanery Foods were not increased. Wapora used the same unit loadings as in the original facility report.

B. We accept your comments regarding grease removals by particular pretreatment processes. The major impact would be a small increase in operation and maintenance costs; capital costs should not be changed significantly.

C. The comments made by Wapora regarding infiltration have some validity. The use of peak flow to determine infiltration during high groundwater can be misleading. A comparison of average flows for similar periods should be also made to more accurately reflect total infiltration.

The same applies to estimation of inflow by measurement of surcharged sewers. It is the experience of the regional office that while this method can furnish information when everything else has failed, it usually leads to inaccurate assumptions and design parameters.

Unless an alternative such as SD1 for a new mechanical plant is implemented, we do not believe that infiltration/inflow will be a problem. The lagoon freeboard available in most of the remaining alternatives should handle the infiltration/inflow received. We suggest that the City review their plant flow records to determine whether the amount of extraneous flow has increased noticeably since the facility report of 1975.

Should events lead to selection of SD1 or some other mechanical plant alternative, the infiltration/inflow analysis would need to be updated to provide more accurate and reliable estimates.

D. The use of a trapezoidal ditch for flow distribution among the existing lagoon cells at Scottsbluff was a poor choice. This will be amended to a more conventional piping form. The operation and maintenance cost for this line item will be corrected to a more reasonable figure (per public hearing comments). We would conservatively estimate this at $2,000/year maximum.

E. This comment regarding the lagoon dikes for the land application alternatives was misinterpreted. The EIS statement (page 134) indicates that lagoon dikes will be raised as proposed in the facility report. The facility report suggested that only the new aerated cell would be increased in height. This is the same assumption made in the draft EIS. The cost analysis reflects same.

F. We have noted the difference in the cost analysis for agricultural irrigation at the north site between the draft EIS and Bell, Galyardt and Wells' facility report amendment of July 1977. Based on the bidding data we have available and estimated cost for lagoons in similar soil conditions, we believe Wapora's estimate to be more accurate. A recent low bid for bentonite sealing for a 16-acre lagoon system was $133/ton with an application rate of 1.5 lbs/ft^2. Assuming that an application rate of 1.0 lbs/ft^2 is necessary to protect groundwater and keep percolation to 1/8-inch per day, the north site storage lagoon would cost approximately $300,000.00 to seal. While cost savings can be expected with the increased size of the Scottsbluff lagoons, we feel this indicates that Bell, Galyardt and Wells' July 1977 estimate for these lagoons is low.

The cost for land and irrigation equipment does not need to be deleted from the cost analyses for the application alternatives. The costs for all three land acquisition alternatives are given in Table III-28 on page 310 of the draft EIS. Note the detailed discussion regarding this table starting on page 308. These figures show that whether the City owns the application site, rents it or sells treated wastewater to a private landowner makes little difference in the final cost analysis. The cost analysis for north site land application will be corrected in the final EIS to show a figure of close to 56¢/1,000 gallons rather than the 57.3¢/1,000 gallons shown. These costs corrections were discussed at the March 1, 1978, hearing. Table III-28 will also be corrected to reflect this figure.

The cost for the pumping station from existing storage lagoons to the north irrigation site was recalculated by Wapora from the figure given in the original facility report. We believe Bell, Galyardt and Wells' figure of $90,000 is unrealistic. Attached is a graph compiled by the Environmental Protection Agency (EPA) from construction bids for the period 1973-1977. Also attached is a table for local cost correction. These tables show that for a design flow of 3.22 mgd, as estimated for Scottsbluff, an average plant influent pump station construction cost would exceed $400,000. Since this particular station will require relatively large horsepower motors (approximately 250 total horsepower to handle average flow), we believe that the $352,000 is far more reasonable.

The three buildings proposed for the AIN alternative can be consolidated into two buildings. The savings would not materially affect this cost analysis.

Our comments on aeration equipment and alternatives SD2, SD3 and SD4 are outlined later in this letter. The difference in aeration equipment cost of $96,000 between the EIS and Bell, Galyardt and Wells results in a final cost difference of 0.75¢/1,000 gallons. The most important factor is the operation and maintenance cost. Since design of aerated lagoons is an inexact science, the volume of the basin, required horsepower and method of aeration are subject to some variance. We request your comments on Wapora's design as outlined in Appendix J, as well as any information you have on the lagoon temperatures during winter operation.

G. We believe the site improvement costs for complete retention in the valley are included in Wapora's analysis. There is no line item for this particular work so Wapora is rechecking their analysis.

The cost analysis for valley complete retention will be revised to show an estimated cost of $400/acre as suggested by your letter. This, along with the corrected operation and maintenance (see response to D) for the new distribution pipe of $2,000/year, changes the total annual cost to $325,067/year or 27.5¢/1,000 gallons. Further cost refinements are outlined later in this letter.

H. A direct comparison between alternative SD4 in the draft EIS and the DAF alternative developed by Bell, Galyardt and Wells in the July 1977 supplemental facility plan is not possible. This is mainly due to the high degree of pretreatment assumed in the EIS. The costs developed by Bell, Galyardt and Wells are more closely comparable to alternative SD2 or SD3 as outlined in the facility report.

Our main concern here is in finalizing costs for all the upgrade options, including the regional alternative RSD2. We have corrected the costs for these alternatives to show the effect of the revised operation and maintenance for the new distribution pipe of $2000/year.

SD2	49.4¢/1,000 gallons
SD3	29.7¢/1,000 gallons
SD4	22.0¢/1,000 gallons
RSD2	36.5¢/1,000 gallons

We feel these figures also clearly demonstrate the importance of industrial pretreatment in consideration of any upgrade option. The most cost-effective solution at 22¢/1,000 gallons calls for 90 percent pretreatment, while the upgrade option which requires no pretreatment is only the seventh most cost-effective solution.

We believe that Wapora's estimate for alternative SD3 is representative if DAF is the assumed effluent clarification process. Should microscreening be chosen, additional treatment or storage might be necessary to meet permit limitations during winter operation. These additional costs would be partially offset by the potential savings in sludge treatment and disposal. Within the limitations imposed by our knowledge of these effluent clarification processes, we therefore accept the analysis of Wapora pending pilot plant data.

The analysis for SD4 raises questions concerning the ability of this alternative to meet permit limitations during the winter months, even with DAF as the chosen effluent clarification. We believe that the proposed 36 lbs BOD_5/acre/day could result in violations of the BOD_5 during extreme weather conditions. There are two alternatives that could be considered. One would be to utilize the 3-foot freeboard and the other would be to provide some supplemental aeration. Assuming diffused aeration equipment is added to provide aeration in existing Cells 5 and 6 (about $150,000) and that operation and maintenance costs are approximately $40,000/year, this alternative would cost 28.5¢ per 1,000 gallons. The city's comments regarding these alternatives are requested.

Note that all cost analyses for the upgrade options involve treatment rather than storage. This is based on a realization that 120 days storage would require an additional 118 acres of land. Since the existing lagoons are a major obstruction to the 100-year flood, the construction of 100 or more acres of lagoon would present serious problems. It would be necessary to design these storage lagoons so that the obstruction to floodwaters was equal to or less than the current lagoons. Other alternatives, including sites out of the 100-year floodplain, would need to be considered. The additional costs for alternate sites would then be analyzed in light of the North Platte's unique flood characteristics.

The cost for mechanical, electrical, site improvements, etc. are included in Wapora's estimate although not shown separately as in Bell, Galyardt and Wells' estimate. Many items were taken from EPA cost data which shows total cost for each process unit.

We are asking that Flannery Foods be invited to respond to the question of which pretreatment alternative is practical. Further, we suggest that they be invited to the next meeting to present their views and outline their progress since the May 8, 1978, letter. We would like to have their comments on the availability of sites for the pretreatment required by SD4. We also need their letter of intent.

Memo from Frank Koehler to City Council

1. The reference to "overloading and inefficient operation" refers to the lagoons limited ability to meet permit limitation. A revised flow distribution pattern could, however, improve the performance of the lagoons.

2. We realize that the State has issued an order modifying the original compliance schedule. This will be reflected in the final draft EIS.

3. The fate of the Hillerege Addition near the Scottsbluff airport is not a major factor in choosing the treatment process.

4. The cost for separation of sanitary wastes along Highway 71 (Broadway) is included in all regional alternatives which call for pumping Terrytown's waste to the Scottsbluff interceptor. Your comments on the estimate included would be valuable.

5. The loss of tax revenue is included to present a more accurate overall cost that represents a "national perspective." Therefore, whether the tax revenue is county or city does not matter in the overall cost analysis.

6. Your comment is noted.

7. The term "administrative expenses" as used by Wapora is that commonly used in facility planning and is based more on grant program regulations than on normal City operation.

Letter from Bell, Galyardt and Wells

1. No comment.

2. No comment.

3. See previous comment on trapezoidal ditch.

4. No comment.

5. The valley irrigation alternative is not cost-effective. We have already recalculated the valley complete retention costs at the suggested market price of $400/acre. At these prices, we feel a site should be available. The cost analysis is relatively insensitive to price increases in land, as previously demonstrated. We would prefer that final site selection for this alternative be performed by the City and its consultant.

6. See previous comment on land prices.

7. The State requires that lagoons be designed on the basis of an assumed 1/8-inch percolation/day. The EIS assumes this in all lagoon sizing calculations. The reference to 1/4-inch per day refers to the maximum test seepage rate that is allowable immediately after construction.

8. The EIS acknowledges the effect of late season application on sugar beet sugar content. This is outlined in page 242. Since reduced sugar content affects crop value, the net result is additional storage requirements and increased cost for the land application alternatives. This cost would be included before proceeding with any land application alternative.

9. Further investigations of boron sources are entirely dependent upon final cost-effective analysis for the land application alternatives. Based on what we know now, there is no reason for an expensive investigation of boron sources.

10. Boron is a conservative element (not lost through volatilization). We believe that concentration factors calculated for the TDS during lagoon storage are valid for boron.

11. The cost analysis for land application and complete retention do not include line items for runoff drainage control or leachate capture by underdrains. We are asking Wapora to update the valley complete retention alternative with a cost item for curtain drains and pumping facilities. Again, we do not feel that the land application alternatives are favorable enough to merit revising the cost analysis.

12. The need for shelter belts at the land application sites is still one more cost that reduces the attractiveness of these alternatives.

13. No comment.

14. Wapora addressed the local management alternatives to the extent practical. Further discussion depends on the alternative chosen. We would be interested in having the City's comments regarding these issues.

Further Comments

The City should also be aware that the Clean Water Act will change the amount of funding for certain alternatives. The land application alternatives would receive a grant for 85 percent of the capital costs. The same would apply to complete retention lagoons except that land purchase costs would still be ineligible. The use of DAF or microscreening, if considered innovative technology, would be eligible for an 85 percent grant for the process. The entire project is eligible for an 85 percent grant if the innovative components are more than 50 percent of the total project present worth. Since this is not true of any upgrade option, only the innovative component might be eligible for the 85 percent participation. We have recalculated the local costs for the following alternatives:

	Local Costs (¢/1,000 gallons)	
	Under 92-500	Under 1977 Amendments
AIS	10.00¢	7.63¢
AIN	13.00¢	10.00¢
AIS	8.77¢	7.00¢
CRS	12.70¢	11.80¢
CRN	15.60¢	13.40¢
CRV	8.40¢	7.50¢
RCRV	10.56¢	9.27¢

We are attempting to finalize costs for the valley complete retention alternatives. There are three costs which must be added. The first is for a curtain drain system to control depth to groundwater and the second is site improvements, including fencing and access roads which were left out of Wapora's costs analysis. The third is a $70,000 capital cost error. We will provide our final cost computations at the July 17, 1978, meeting.

If there are any further questions regarding these matters, please refer them to Mr. Ralph Flournoy of our Engineering Branch. His telephone number is 816/374-2725.

Sincerely yours,

Paul M. Walker
Chief, Engineering Branch
Water Division

cc: Nebraska Department of
Environmental Control
Bell, Galyardt and Wells
Wapora, Inc.

Attachments

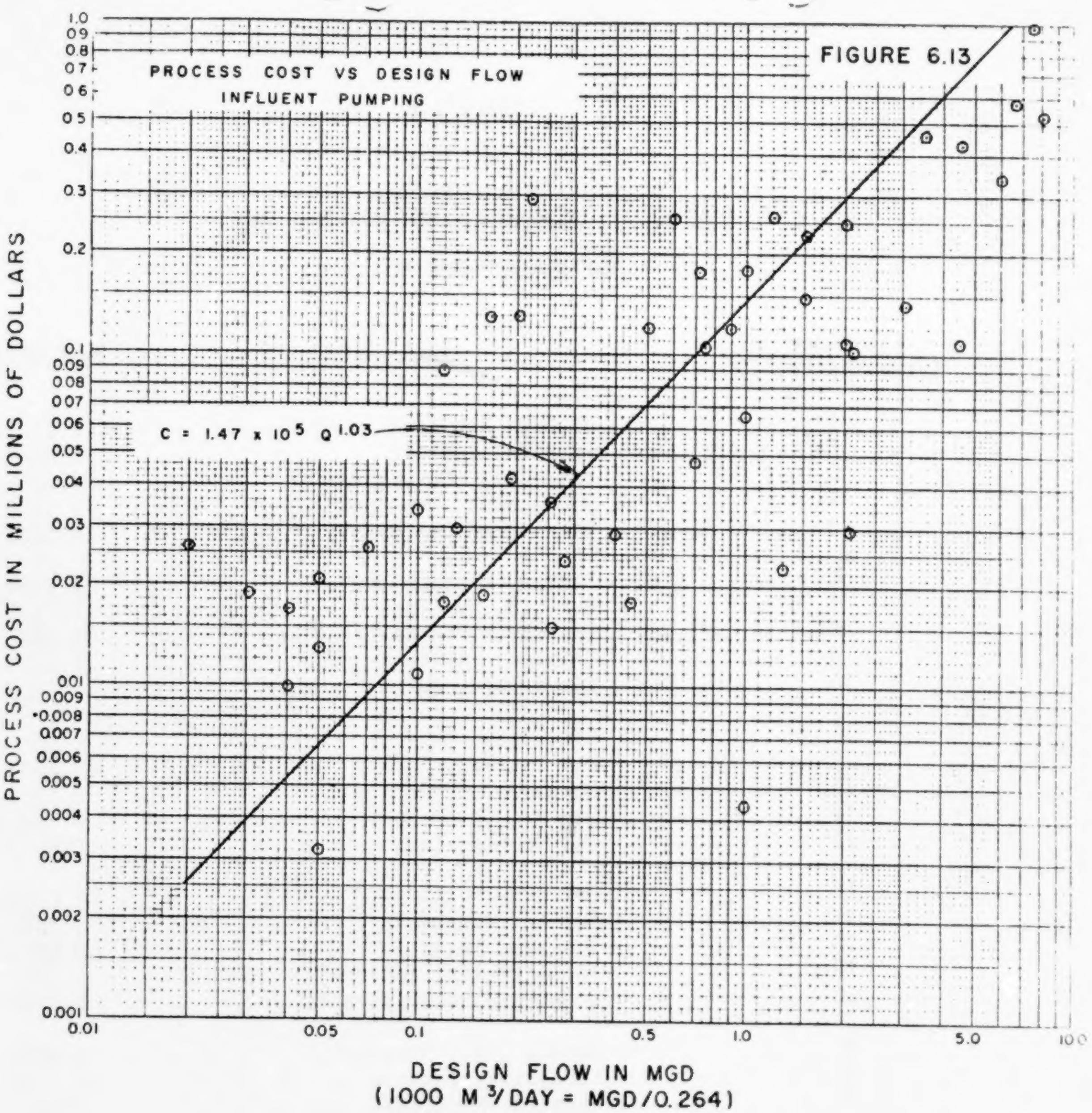


FIGURE 6.13

PROCESS COST VS DESIGN FLOW
INFLUENT PUMPING

TABLE 7.1

CITY MULTIPLIERS
WASTEWATER TREATMENT PLANT CONSTRUCTION

REFERENCE: MAP NO. 7.1

City Code (From Map No. 1)	City	Multiplier
1	Albany, New York	1.1985
2	Atlanta, Georgia	0.8347
3	Baltimore, Maryland	1.0083
4	Binghamton, New York	1.1722
5	Birmingham, Alabama	0.8289
6	Boston, Massachusetts	1.1349
7	Buffalo, New York	1.2171
8	Charlotte, North Carolina	0.6281
9	Chicago, Illinois	1.2209
10	Cincinnati, Ohio	1.0415
11	Cleveland, Ohio	1.0744
12	Dallas, Texas	0.7934
13	Davenport, Iowa	0.8336
14	Denver, Colorado	0.8843
15	Des Moines, Iowa	0.8371
16	Detroit, Michigan	1.0415
17	Duluth, Minnesota	1.2468
18	Houston, Texas	0.8678
19	Indianapolis, Indiana	1.1411
20	Johnstown, Pennsylvania	0.9703
21	Kansas City, Missouri	1.0000
22	Lafayette, Indiana	1.1148
23	Lansing, Michigan	1.0577
24	Los Angeles, California	1.0578
25	Miami, Florida	0.8843
26	Milwaukee, Wisconsin	1.0415
27	Minneapolis, Minnesota	1.0415
28	New Orleans, Louisiana	0.9256
29	New York, New York	1.4322
30	Philadelphia, Pennsylvania	1.1818
31	Pittsburgh, Pennsylvania	1.0413
32	Portland, Maine	1.1226
33	Providence, Rhode Island	1.1209
34	St. Louis, Missouri	1.1009
35	San Diego, California	1.0768

Scottsbluff North Site

Hp (avg. flow) = 3.22 x 10^6 gallons/day x 1 cu ft/7.48 gallons x 62.4 lbs/1 cu ft x 1 day/86,400 sec x 400 ft* x 1 hp/550 ft lb/sec = 225 hp; however, efficiency is 90%. Therefore, required hp = 250 hp.

Hp (peak flow) = 5.04 x 10^6 gallons/day x 1 cu ft/7.48 gallons x 62.4 lb/1 cu ft x 1 day/86,400 sec x 444 ft** x 1 hp/550 ft lb/sec = 392 hp; however, efficiency is 90%. Therefore, required hp = 436 hp.

* Total dynamic head (avg. flow) = 400 ft (370 ft static + 30 ft friction)

** Total dynamic head (peak flow) = 444 ft (370 ft static + 74 ft friction)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
1735 BALTIMORE
KANSAS CITY, MISSOURI 64108

RECEIVED
NOV 17 1978
ENGINEERING BRANCH
WATER DIVISION

August 1, 1978

Scottsbluff, Nebraska
Project No. C310474-01

Honorable Donald E. Overman
Mayor of Scottsbluff
Scottsbluff, Nebraska 69361

Dear Mayor Overman:

This letter is a follow-up to our July 17, 1978, meeting. At that meeting, we provided certain cost data which we promised we would put in writing for the record.

These cost revisions are for the valley complete retention alternative. The following items represent our best estimate of the final costs for that alternative:

Site Improvements

Fencing	$30,000	
Access Road	10,000	
Seeding	30,000	
	$70,000	or 0.57¢/1000 gallons

Force Main Distribution Line (in lieu of trapezoidal ditch proposed in EIS)

New Force Main	$150,000	
EIS Cost for Trapezoidal Ditch	-30,000	
	$120,000	increase or 0.98¢/1000 gallons

Given the above additional costs and the adjusted figure of 27.5¢ per 1000 gallons from our July 7, 1978, letter, the final cost would be 29.05¢/1000 gallons. We have also provided costs for a curtain drain system. This cost is attached for reference. However, there are available sites within the valley complete retention area where this would not be required.

The costs for upgrade alternatives SD2 and SD3 would need to be adjusted for the cost difference between a gravity distribution main and the trapezoidal ditch proposed in the EIS. We estimate this to represent an additional $40,000 over the cost given in the EIS. This represents 0.32¢ per 1000 gallons. The final figures are:

SD2 49.72¢/1000 gallons
SD3 30.02¢/1000 gallons

The preferable site for the valley complete retention lagoons within the area described in the EIS appears to be just northeast of the existing lagoons and immediately east of the Scottsbluff landfill area. Enclosed is a copy of the USGS map (Attachment 1) and the soils map (Attachment 2) showing this area outlined in red (Sections 34, 35 and 36 north of Highway 26). Taking the section line roads, drainage ditches and existing residences into account, there are about 800 acres available. A description (Attachment 3) of the Minatare-Janise soils involved is also included. Note that clay and clay loam are common to both soil profiles. The water table is about 3 to 5 feet deep. We estimate that excavation would not need to be much deeper than one foot to provide sufficient soil for the lagoon dikes.

A visual survey was made Monday afternoon, July 17, 1978, by our office and the Nebraska Department of Environmental Control. Based on that survey and information obtained from Norman Helzer of the State Soil Survey, this area appears reasonably favorable. We do not anticipate any need for unusually high application rates for bentonite sealer as suggested at the meeting. Therefore, the costs given in the EIS for this alternative can be considered reliable. We believe the alternative should receive careful consideration by the City and its consultants.

This additional information is provided for the following reasons:

1. Identification of actual sites for the valley complete retention lagoon as requested by your public hearing comment letters.

2. Assure proper consideration of this alternative. The recent Clean Water Act of 1977 (PL 95-217) encourages the use of innovative or alternative technologies. According to the proposed April 25, 1978, regulations, complete retention ponds may qualify as alternative technology. This raises the potential federal share of eligible construction to 85 percent as outlined in our July 7, 1978, letter.

As stated at the July 17, 1978, meeting, our reasons for rejecting land application as a viable option are:

1. The cost of the most cost-effective land application alternative, at the south site (AIS), is 48.71¢/1000 gallons. The most cost-effective solution currently is around 30¢/1000 gallons. This represents a differential of 62 percent. When the additional costs for runoff control and

leachate underdrains are added, the cost [illegible] cent. The Clean Water Act of 1977 provides in Section 201(j) for no more than an additional 15 percent. The appropriate sections of the new law regarding this are attached for reference. See Attachment 4.

2. There is considerable public opposition to the irrigation alternative at the south site. This opposition will delay implementation of this alternative.

3. While the environmental aspects of the ten alternatives were studied in considerable detail and reconciled to our satisfaction, the irrigation alternatives and the south site in particular have known potential for adverse impacts on groundwater quality and soil erosion. The extent of this impact is unknown since it depends to a large extent on operation.

Pending their letter of intent, we request that the City and Flanery Foods respond in writing concerning the availability of land for the anaerobic-aerobic lagoons suggested by alternative SD4. How much land does the industry currently own, how much additional land is available close by, and how close are residential areas to these sites? A map outlining this would be helpful.

We are notifying Gering, Nebraska, that should they choose to upgrade their existing facilities, we would encourage pilot plant testing of microscreening to start as soon as possible. We recommend that pilot plant work be performed on the Gering effluent since we believe it is more representative of expected final conditions prior to clarification and discharge. Should Scottsbluff choose an alternative that calls for effluent clarification, we would strongly recommend a joint research effort to study the microscreening. We will not fund separate pilot plant studies unless it is clearly demon-that there are differences in the lagoon discharges of the two systems.

If there are any questions regarding this project you may refer them to Mr. Ralph Flournoy of our Engineering Branch. His telephone number is 816/374-2725.

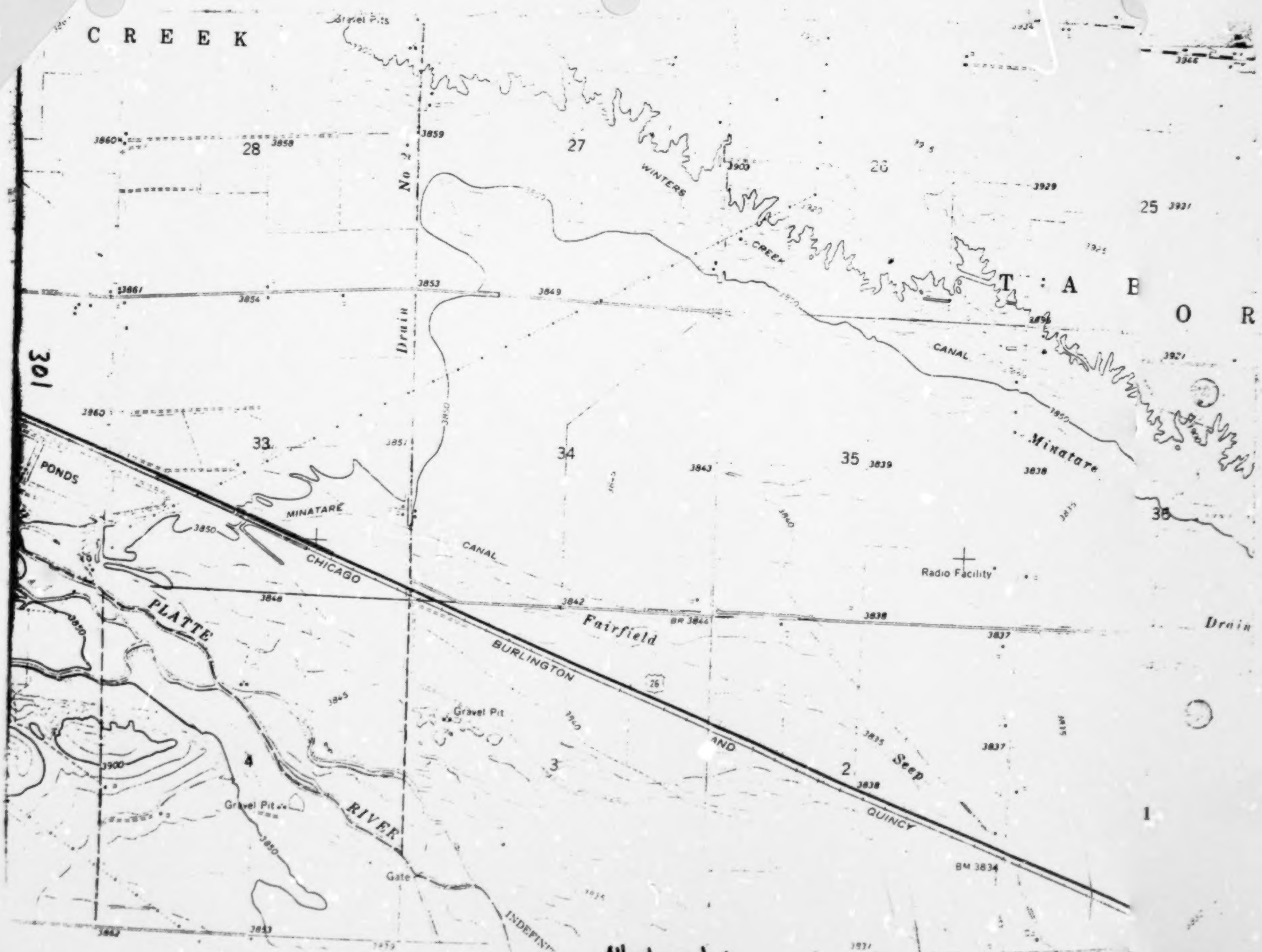
Sincerely yours,

Paul M. Walker
Chief, Engineering Branch
Water Division

Attachments

cc: Nebraska Department of Environmental Control
Bell, Galyardt and Wells
Wapora, Inc.

301


CREEK
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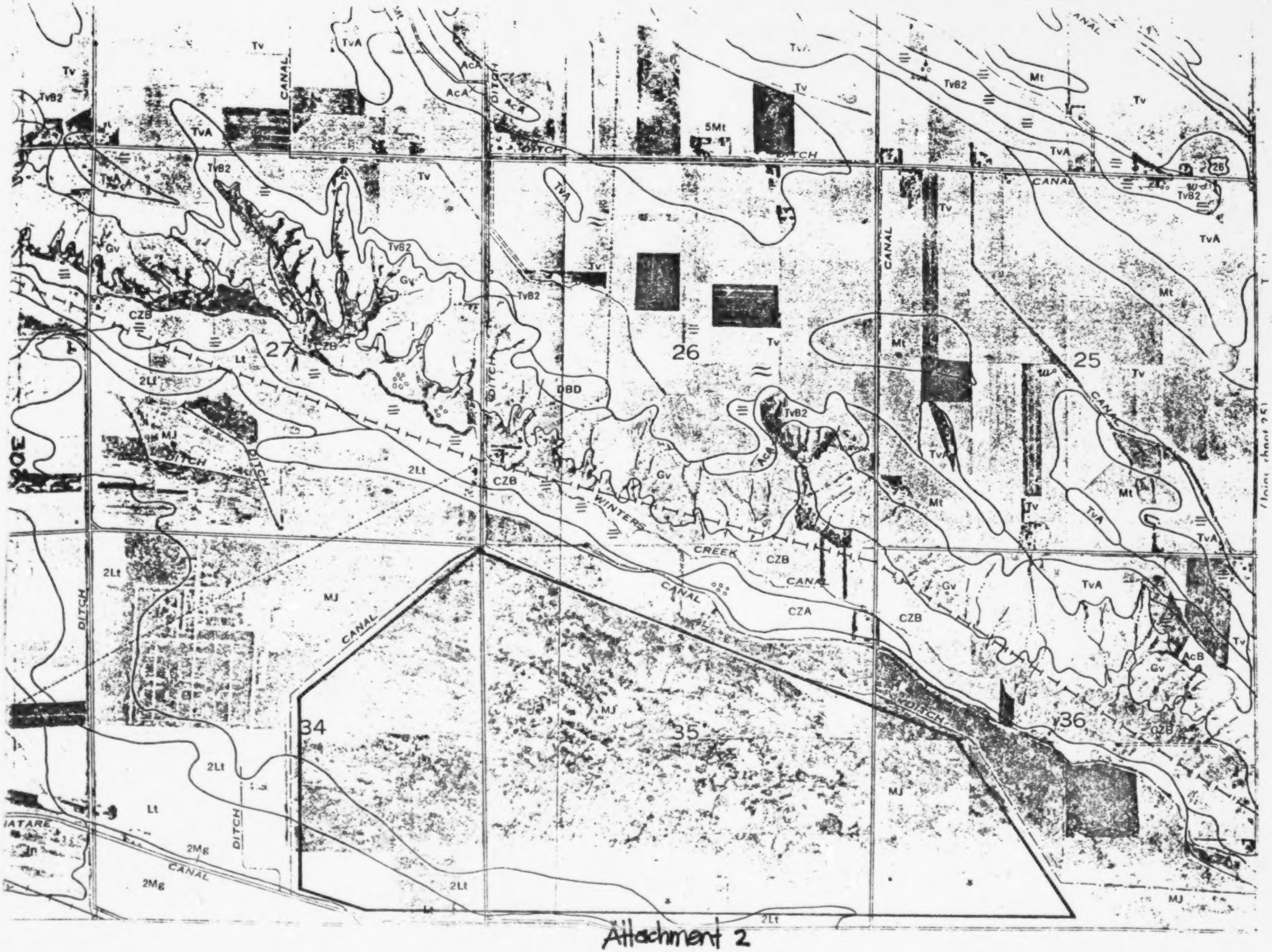
Attachment 1



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WINTERS
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CZB
CZA
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Lt
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MJ
2Mg

Attachment 2

orn, potatoes, sugar beets, field beans, [illegible]d alfalfa grow well where management is good.

Typical profile of a Haverson fine sandy loam, in an irrigated field of alfalfa, about 0.49 mile east and 0.7 mile south of the northwest corner of section 30, T. 22 N., R. 54 W.:

Ap—0 to 8 inches, light brownish-gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) when moist; weak, medium, granular structure; soft when dry, very friable when moist; violent effervescence; mildly alkaline; abrupt, smooth boundary.

A1—8 to 16 inches, light brownish-gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) when moist; weak, coarse, prismatic structure; soft when dry, very friable when moist; violent effervescence; midly alkaline; clear, smooth boundary.

C1—16 to 26 inches, light-gray (10YR 7/2) loam, light brownish gray (10YR 6/2) when moist; weak, medium, subangular blocky structure; slightly hard when dry, friable when moist; violent effervescence; mildly alkaline; clear, smooth boundary.

C2—26 to 36 inches, white (10YR 8/2) loam, light brownish gray (10YR 6/2) when moist; few distinct mottles; weak, medium, subangular blocky structure; slightly hard when dry, friable when moist; violent effervescence; moderately alkaline; abrupt, smooth boundary.

C3—36 to 56 inches, light brownish-gray (10YR 6/2) fine sandy loam, grayish brown (10YR 4/2) when moist; few, fine, distinct mottles; massive (structureless); soft when dry, very friable when moist; violent effervescence; mildly alkaline; abrupt, smooth boundary.

IIC4—56 to 60 inches, brownish sand and gravel; single grain (structureless); loose.

The A horizon ranges from 8 to 20 inches in thickness and from light gray to light brownish gray in color. It is very fine sandy loam in many places. Structure of the substratum ranges from massive in the more weakly developed horizons to weak subangular blocky in the more strongly defined horizons. The substratum ranges widely in texture. Depth to sand and gravel ranges from 40 to 72 inches. Depth to the water table ranges from 6 to 8 feet.

The Haverson soils are finer textured in the C horizon and are better drained than Las Animas soils. They have a lower water table than the Las soils and are better drained. Haverson soils are similar to McCook soils but have a lighter colored surface layer.

Haverson fine sandy loam, 0 to 1 percent slopes (Hf).—This soil is nearly level. Runoff is slow, and the rate of water intake is moderately rapid.

The profile of this soil is the one described as typical of the Haverson series. Included with this soil in the mapping were a few areas where the surface layer is nonlimy. Also included were areas where buried, dark-colored soils occur and small areas of loam.

Nearly all of this soil is in irrigated crops. It is suited to all irrigated crops commonly grown. Soil blowing is serious when this soil is not protected by crop residue or a growing crop. Tillage that roughens the surface helps to control blowing. Crops generally grow well. Capability units IIIe-3 (dryland) and IIe-3 (irrigated); Sandy Lowland range site; Sandy windbreak suitability group.

Janise Series

The Janise series consist of deep, nearly level to very gently sloping, strongly saline-alkali soils that typically are medium-textured throughout the profile. In most areas these soils developed mainly in silty materials that washed from areas of weathered siltstone. In some areas these soils developed in more variable alluvial materials on bottom lands. The Janise soils are somewhat poorly drained. In most areas the water ta[illegible] is at a depth of 3 to 5 feet. Some areas are gullied and channeled. These soils occur on the Lyman Plain and on bottom lands along the North Platte River.

In a typical profile, the surface layer is light-gray loam about 1 inch thick. It has weak platy structure, is strongly calcareous, and is moderately alkaline.

The subsoil is gray to light-gray clay loam about 7 inches thick. It has weak prismatic structure in the upper part and weak subangular blocky structure in the lower part. This layer is rich in lime and very strongly alkaline. The lower part is slightly saline.

At a depth of about 8 inches is white silt loam that has weak subangular blocky structure. This material is slightly hard when dry and friable when moist. It is rich in lime, very strongly alkaline, and slightly to moderately saline. This layer is slightly more sandy in the lower part.

In most areas seepage keeps the Janise soils saturated below a depth of 36 inches, and capillary movement of water keeps the soil above this depth moist during most of the year. Permeability of the subsoil is slow because of the large content of salts and alkaline, which tends to stop the downward movement of water.

Janise soils are too strongly affected by alkali for cultivated crops. Nearly all the acreage is in native grass and is used for pasture. The main native grasses are inland saltgrass, alkali sacaton, and western wheatgrass. Greasewood, a woody shrub about 2 or 3 feet tall, grows on the higher Janise soils.

Typical profile of a Janise loam, in a permanent pasture, about 0.43 mile west and 200 feet south of the northeast corner of section 10, T. 22 N., R. 58 W.:

A2—0 to 1 inch, light-gray (10YR 7/1) loam, dark gray (10YR 4/1) when moist; weak, thin, platy structure; soft when dry, very friable when moist; noncalcareous; abrupt, wavy boundary.

B2t—1 to 4 inches, gray (10YR 6/1) clay loam, dark grayish brown (10YR 4/2) when moist; moderate, medium, prismatic to moderate, medium, blocky structure; slightly hard when dry, firm when moist; violent effervescence; clear, smooth boundary.

B3t—4 to 8 inches, light-gray (10YR 7/2) clay loam, grayish brown (10YR 5/2) when moist; moderate, medium subangular blocky structure; slightly hard when dry firm when moist; violent effervescence; clear, smooth boundary.

C1—8 to 30 inches, white (10YR 8/2) silt loam, light brownish gray (10YR 6/2) when moist; weak, coarse, subangular blocky structure; slightly hard when dry friable when moist; violent effervescence; clear, smooth boundary.

C2—30 to 60 inches, white (10YR 8/2) silt loam with thin lenses of fine sandy loam and very fine sandy loam light brownish gray (10YR 6/2) when moist; many, fine, distinct mottles; massive (structureless); slightly hard when dry, friable when moist; violent effervescence.

The surface layer ranges from 1 to 6 inches in thickness. In some places the upper part is darker colored than the lower part. This layer is nonlimy in some places, but in others it is rich in lime and very strongly alkaline. The texture generally is silt loam, loam, very fine sandy loam, and fine sandy loam In small depressions the surface layer commonly is strong affected by alkali. These depressions are usually barren. The subsoil ranges from silty clay loam to loam or silt loam in texture and from 4 to 12 inches in thickness. Structure is stronger in low positions, but in some places this soil is weakly developed and massive. The Janise soils mapped in one area are not affected by a high water table, but in other areas the water table is at a depth of 3 to 5 feet. The Janise soils th occur on the bottom lands along the North Platte River overli

Attachment 3

mixed sand and gravel at a depth of 2 to 6 feet. On the Lyman Plain, the Janise soils overlie silty or slightly sandy colluvium or alluvium.

The Janise soils are not so fine textured nor so strongly developed as the Minatare soils or Slickspots. They are wetter than Slickspots because they have a higher water table and receive seepage.

Janise soils (0 to 3 percent slopes) (Jn).—These soils are nearly level to very gently sloping. A few areas are channeled. Runoff is very slow, and much water collects in depressions and slowly seeps away or evaporates.

The profile of these soils is the one described as typical for the Janise series.

Included in the mapping were small areas of Buffington and Mitchell soils. Also included, south of Morrill, was an area that has a sandy clay loam subsoil and a substratum of stratified alluvial materials.

Because their content of alkali is high, Janise soils are not suited to cultivated crops. They are suited to grasses that tolerate alkali. In farmed areas, tall wheatgrass is a suitable tame grass. Nearly all the acreage is in permanent pasture. Attempts to grow cultivated crops under irrigation are few, and results are poor. Because the choice of crops is limited and growth is poor, the time, effort, and expense needed for cultivation are not justified. Capability units VIs-1 (dryland) and VIs-1 (irrigated); Saline Subirrigated range site; windbreak suitability group not assigned.

Keith Series

The Keith series consists of deep, medium-textured soils on the uplands in the southwestern part of the county. These soils developed in loess, which is a silty wind-deposited material. Slopes range from 0 to 9 percent.

In a typical profile, the surface layer is grayish-brown loam about 10 inches thick. It has weak granular structure in the upper part and weak prismatic structure in the lower. This layer is easily tilled. It is free of lime and neutral in reaction.

The upper part of the subsoil is light brownish-gray heavy loam about 14 inches thick. It has weak but well-formed subangular blocky structure. This layer is friable when moist. It is nonlimy and mildly alkaline.

Lime has accumulated in the lower part of the subsoil. This part is light-gray silt loam about 9 inches thick. It has weak subangular blocky structure, is rich in lime, and is moderately alkaline.

The substratum is at a depth of about 35 inches. It is nearly white silt loam that is friable, rich in lime, and moderately alkaline.

Soils of the Keith series have medium water-holding capacity. The permeability of the subsoil and substratum is moderate. These soils are high in natural fertility. They are susceptible to soil blowing and water erosion where they are not protected by a plant cover.

In this county about 85 percent of the acreage of Keith soils is dryfarmed mainly to wheat. About 10 percent of the acreage is in irrigated crops, mainly corn, sugar beets, field beans, and alfalfa. The remaining acreage is in permanent pasture. The main native grasses are blue grama, little bluestem, buffalograss, needle-and-thread, and western wheatgrass.

Typical profile of a Keith loam, in fallow, about 0.3 mile east and 150 feet north of the southwest corner of section 6, T. 21 N., R. 57 W.:

Ap—0 to 6 inches, grayish-brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) when moist; weak, medium, granular structure; slightly hard when dry, friable when moist; neutral; adrupt, smooth boundary.

A1—6 to 10 inches, grayish-brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) when moist; weak, medium, prismatic structure; slightly hard when dry, friable when moist; neutral; clear, smooth boundary.

B1—10 to 14 inches, grayish-brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) when moist; weak, medium, prismatic structure that breaks to weak, medium, subangular blocky structure; slightly hard when dry, friable when moist; neutral; clear, smooth boundary.

B2—14 to 24 inches, light brownish-gray (10YR 6/2) heavy loam, dark grayish brown (10YR 4/2) when moist; weak but well-formed, medium, subangular blocky structure; hard when dry, friable when moist; mildly alkaline; abrupt, smooth boundary.

B3ca—24 to 35 inches, light-gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) when moist; weak, medium, subangular blocky structure; slightly hard when dry, friable when moist; violent effervescence; moderately alkaline; clear, smooth boundary.

C—35 to 60 inches, white (10YR 8/2) silt loam, light brownish gray (10YR 6/2) when moist; massive (structureless); soft when dry, friable when moist; violent effervescence.

The A horizon ranges from loam to silt loam, very fine sandy loam, or fine sandy loam in texture and from 6 to 13 inches in thickness. In most places structure in the subsoil is weak prismatic in the upper part but breaks to weak or moderate subangular blocky. The texture of the subsoil ranges from loam to light silty clay loam. Thickness of the subsoil ranges from 12 to 30 inches.

Keith soils have a thinner surface layer than Duroc soils. They have a more strongly developed subsoil than Mitchell or Bridgeport soils and are deeper to lime. Keith soils are similar to Rosebud soils but formed in loess, whereas Rosebud soils formed in material weathered from sandstone.

Keith loam, 0 to 1 percent slopes (Ke).—This is a nearly level soil on uplands. In places it is underlain by Brule siltstone at a depth of 4 to 5 feet.

The profile of this soil is the one described for the Keith series. The surface layer is dominantly loam in texture, but a few areas of silt loam and very fine sandy loam were included in mapping.

Nearly all of this soil is cultivated. Wheat, the main crop, grows well where management is good. Soil blowing is a hazard, but it can be controlled by planting crops in strips that are alternated with strips allowed to lie fallow under a stubble mulch. Growth of crops is favorable in irrigated areas. Capability units IIIc-1 (dryland) and I-1 (irrigated); Silty range site; Silty to Clayey windbreak suitability group.

Keith loam, 1 to 3 percent slopes (KeA).—This is a very gently undulating soil of the uplands. In a few areas, Brule siltstone is at a depth of 4 to 5 feet and fragments of unweathered siltstone occur below the surface layer. Runoff is slow.

Except that it is not so well developed, this soil has a profile similar to that described for the Keith series. The surface layer is mainly loam in texture, but a few areas of silt loam and very fine sandy loam were included in mapping. Also included were small areas of Ulysses soils.

Management is needed that controls soil blowing and conserves water. Effective practices are planting crops in

Except for the content of salts and alkali and the loam surface layer, this soil has a profile similar to the one described as typical for the McGrew series. A few areas of fine sandy loam were included in the mapping. Also included were areas of Gering and Las soils that are affected by salts and alkali.

About one-third of the acreage is in irrigated crops. Sugar beets, alfalfa, and corn are better suited than field beans or potatoes. Barnyard manure added to cultivated soil improves infiltration. Sulfur or gypsum added early in spring helps to neutralize the alkali, but seldom permanently unless the water table is lowered. Lowering the water table is difficult in most places. Treatment generally must be repeated at least every 5 years. Most of this soil is in native pasture or hay. Because this soil is subirrigated, native plants grow well. Capability units IVs-1 (dryland) and IIIs-1 (irrigated); Subirrigated range site; Moderately Saline or Alkali windbreak suitability group.

Minatare Series

The Minatare series consists of deep, strongly alkali soils that have a fine-textured subsoil. These are nearly level and somewhat poorly drained soils on bottom lands in the valley of the North Platte River. They formed in alluvium. Minatare soils occur in a general area northwest and southeast of Minatare and in another area northeast of Lyman. Small, shallow, intermittent streams are common in most areas.

In a typical profile, the upper part of the surface layer is gray loam only about 1½ inches thick. It has weak crumb structure. This part is friable, nonlimy, and mildly alkaline. The lower part is light-gray loam about 1½ inches thick. It has weak platy structure. This part is friable, nonlimy, and strongly alkaline.

The subsoil is light brownish gray and is about 17 inches thick. It is very strongly alkaline, moderately saline, and rich in lime. The upper part of the subsoil is clay loam that is hard when dry and very firm when moist. The lower part is clay loam that is hard when dry and firm when moist. Structure is prismatic, blocky, or subangular blocky.

Below the subsoil is a layer of accumulated lime about 13 inches thick. This layer is clay loam that has subangular blocky structure. It is very strongly alkaline and strongly saline. When moist, this layer is firm in the upper part and very firm in the lower part.

The substratum at a depth of 33 inches is olive-gray sandy clay loam. This layer has common, medium, distinct, reddish-brown mottles. It is firm, very strongly alkaline, and mildly saline. Mixed sand and gravel occurs at a depth of about 40 inches.

Soils of the Minatare series have a high water-holding capacity. Permeability in the subsoil is slow. When the soils are disturbed, they crack at the surface when dry and become badly puddled when wet. Puddled soils absorb water very slowly. Tillage is difficult. These soils release moisture slowly to plants. Because of the capillary rise of water from the water table, these soils are moist from the water table to the surface much of the year.

Practically all the acreage of the Minatare soils is in permanent pasture or hay. Many areas have been cultivated, but now they are too strongly affected by alkali and salts for cultivated crops. Inland saltgrass, alkali sacaton, and western wheatgrass are the most common native grasses.

Typical profile of a Minatare loam, 600 feet west and 200 feet north of the southeast corner of section 29, T. 21 N., R. 52 W.:

A1—0 to 1½ inches, gray (10YR 5/1) loam, very dark gray (10YR 3/1) when moist; weak, medium, crumb structure; soft when dry, friable when moist; mildly alkaline; abrupt, smooth boundary.

A2—1½ to 3 inches, light-gray (10YR 7/1) loam, gray (10YR 5/1) when moist; weak, thin, platy structure; soft when dry, friable when moist; strongly alkaline; abrupt, wavy boundary.

B2t—3 to 7 inches, light brownish-gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) when moist; moderate, medium, prismatic structure that breaks to moderate, medium, blocky structure; hard when dry, firm when moist; very strongly alkaline, violent effervescence; clear, smooth boundary.

B3t—7 to 20 inches, light brownish-gray (10YR 6/2) clay, dark grayish brown (10YR 4/2) when moist; weak, medium, subangular blocky structure; hard when dry, firm when moist; very strongly alkaline; strong effervescence; clear, smooth boundary.

C1ca—20 to 26 inches, light-gray (10YR 7/2) clay loam, grayish brown (10YR 5/2) when moist; weak, medium, subangular blocky structure; hard when dry, firm when moist; very strongly alkaline; strong effervescence; clear, smooth boundary.

C2ca—26 to 33 inches, light brownish-gray to light-gray (10YR 6.5/2) clay loam, grayish brown (10YR 5/2) when moist; moderate, medium, subangular blocky structure; very hard when dry, very firm when moist; very strongly alkaline; strong effervescence; abrupt, wavy boundary.

IIC3g—33 to 40 inches, light olive-gray (5Y 6/2) sandy clay loam, olive gray (5Y 4/2) when moist; common, medium, distinct mottles of reddish brown; massive (structureless); slightly hard when dry, firm when moist; very strongly alkaline; clear, wavy boundary.

IIIC4—40 to 50 inches +, brownish mixed sand and gravel; medium, distinct, yellowish-brown mottles in the upper part; single grain (structureless).

In undisturbed Minatare soils the upper part of the surface layer is 1 to 2 inches thick; the lower part is 1 to 3 inches thick. Texture of the surface layer is commonly loam, very fine sandy loam, or fine sandy loam. In some places the lower part is limy and strongly alkaline. In places the subsoil has prismatic structure that breaks to moderate angular or subangular blocky structure. The layer of accumulated lime does not occur in all places. A dark-colored, buried soil is common in these soils. Depth to mixed sand and gravel ranges from 40 to more than 60 inches. Depth to the water table ranges from 2 to 6 feet.

The Minatare soils are darker colored than Janise soils and have a finer textured, more strongly developed subsoil. They closely resemble the slickspots in the Slickspots-Keith complex, but they have a higher water table.

Minatare-Janise soils (0 to 1 percent slopes) (MJ).—This complex is about 60 percent Minatare soils and 20 percent Janise soils. In most places areas of these soils are so small and so intermingled that they cannot be separated on the soil map of the scale used. Runoff is very slow or nonexistent.

A profile of Janise soils is described under the Janise series. Areas of this complex have many small depressions in which water stands after rains. In these small depressions, the soils are more strongly saline-alkali than they are in surrounding areas. Some small areas are bare of vegetation. Thick white salt crusts cover the soils in these areas late in fall and early in spring. In an area west of Scottsbluff, the salinity is more serious than alkalinity. Included with this complex in mapping were a few areas that have a fine sandy loam surface layer and some that have a moderately fine textured subsoil. The thin, gray loam surface layer does not occur in all areas of this complex.

The strongly saline-alkali condition of this complex is the main limitation to use. Cultivated crops grow poorly, and grass is a better use. Where the owner desires to seed cultivated areas to permanent grass, tall wheatgrass is one of the better tame grasses. Without lowering the high water table in these soils, the chances for successful reclamation is poor. Before spending money, time, and effort to reclaim these soils, the owner should consult a technician. Capability units VIs–1 (dryland) and VIs–1 (irrigated); Saline Subirrigated range site; windbreak suitability group not assigned.

Mitchell Series

The Mitchell series consists of deep, well drained or moderately well drained, immature soils that have a medium-textured layer beneath the surface layer. These soils formed in material that weathered from Brule siltstone and then was transported and deposited to form short foot slopes or broad, nearly level, basinlike fans. Mitchell soils range from nearly level to steep. They are widely scattered throughout the county.

In a typical profile, the surface layer is light brownish-gray silt loam about 11 inches thick. It has weak granular structure in the upper part and in the lower part weak prismatic structure. This layer has a moderate amount of lime and is mildly alkaline to moderately alkaline.

Beneath the surface layer is about 8 inches of grayish-brown silt loam. This layer has subangular blocky structure, is rich in lime, and is mildly akaline. It is slightly hard when dry and friable when moist.

The substratum is light brownish-gray silt loam. It is rich in lime, is mildly alkaline, and extends to a depth of more than 5 feet. In the upper part, this layer has subangular blocky structure and is friable when moist. The lower part is massive, or structureless. It is soft when dry and very friable when moist.

Soils of the Mitchell series have medium water-holding capacity. Permeability of the underlying layers is moderate. These soils are susceptible to soil blowing and to water erosion when they are not adequately protected by growing crops, crop residue, or permanent vegetation.

Crops grow well on the less sloping Mitchell soils. About 70 percent of the acreage of Mitchell soils is irrigated. Many of the more sloping areas are higher than the irrigation ditches and are dryfarmed, and a few areas are in native pasture. In most of the native pastures short grasses grow, but mid grasses are on some of the sandier areas.

Typical profile of a Mitchell silt loam, 1,740 feet west and 475 feet south of the northeast corner of section 23, T. 22 N., R. 56 W.:

Ap—0 to 9 inches, light brownish-gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) when moist; weak, medium, granular structure; hard when dry, friable when moist; mildly alkaline; slight effervescence; abrupt, smooth boundary.

A1—9 to 11 inches, light brownish-gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) when moist; weak, coarse, prismatic structure; hard when dry, friable when moist; moderately alkaline; strong effervescence; abrupt, smooth boundary.

AC—11 to 19 inches, light-gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) when moist; weak, medium, subangular blocky structure; slightly hard when dry, friable when moist; mildly alkaline; violent effervescense; clear, smooth boundary.

C1—19 to 29 inches, white (10YR 8/2) silt loam, light brownish gray (10YR 6/2) when moist; weak, coarse, subangular blocky structure; slightly hard when dry friable when moist; mildly alkaline; violent effervescence; gradual, smooth boundary.

C2—29 to 60 inches, white (10YR 8/2) silt loam, light brownish gray (10YR 6/2) when moist; massive (structureless); soft when dry, very friable when moist; mildly alkaline; violent effervescence.

The surface layer (A horizon) ranges from 2 to 20 inches in thickness. The texture commonly is silt loam, loam, very fine sandy loam, or fine sandy loam. Depth of lime ranges from the surface to 10 inches. The surface layer ranges from light brownish gray to light gray. In some areas where this layer is less than 5 inches thick, it is grayish brown. The layer beneath the surface layer is mainly silt loam, but in places it is loam or very fine sandy loam. Its structure ranges from massive to weak subangular blocky. Thin sandy layers are common in the substratum. Depth to Brule siltstone bedrock generally is more than 60 inches, but in places it is only 40 inches.

The Mitchell soils are lighter colored than Tripp soils. They are not so strongly developed as Tripp soils and have lime nearer the surface. Although Mitchell and Bridgeport soils are in similar positions, Mitchell soils are lighter colored and formed in material that weathered from siltstone whereas Bridgeport soils formed in material that weathered from grayish sandstone. The Mitchell soils and the Keota and Epping soils formed in material that was derived from siltstone, but the siltstone underlying Mitchell soils is below a depth of 60 inches. Mitchell soils are less strongly developed beneath the surface layer than the Keith soils. In contrast to Mitchell soils, Keith soils formed in wind-deposited materials, are darker colored, and have lime lower in their profile. Mitchell soils are coarser textured than Bullington soils.

Mitchell fine sandy loam, 0 to 3 percent slopes (MzA). This soil is nearly level or very gently sloping. Runoff is slow.

The fine sandy loam surface layer ranges from 10 to 2 inches in thickness. It is very friable and rich in lime. In many areas, the surface layer is made up of material that was blown from adjacent deep sandy soils.

Except for texture of the surface layer, this soil has a profile similar to the one described as typical for the Mitchell series. Included with this soil in the mapping were areas where a dark, buried soil occurs. Also included were a few areas of loamy fine sand, and many areas that have a darker colored surface layer than is typical for the series. In some areas, the dark color extends to a depth of 24 to 30 inches. Other inclusions are small areas of Keota soils, and areas near Lyman that have a silty clay loam subsoil.

Soil blowing, water erosion, and the maintenance of fertility are the main concerns of management. When the soil is not protected by a growing crop or crop residue, the surface should be roughened to prevent soil blowing. Contour farming and bench leveling are good practices on this soil. Most areas are irrigated.

Maintaining the fertility of this soil is important. Nonlegume crops respond to large amounts of nitrogen, and alfalfa generally responds to phosphate. Particularly beneficial are a cropping sequence that provides a legume, a green crop that is plowed under, and crops that leave a large amount of residue. All crops commonly irrigated in the county are suited to this soil. Growth of crops is favorable when management is good. Capability units IIIe-

ATTACHMENTS SAME AS AUGUST 1, 1978, LETTER TO SCOTTSBLUFF

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
1735 BALTIMORE
KANSAS CITY, MISSOURI 64108

August 2, 1978

[illegible]
[illegible] OF
[illegible] CONTROL

Gering, Nebraska
Project No. C310631-01

Honorable John McLellan, Jr.
Mayor of Gering
City Hall
Gering, Nebraska 69341

Attention: Mr. Richard Kroon

Dear Mayor McLellan:

This letter is a follow-up to the afternoon meeting on July 17, 1978, with my staff. Included are the cost figures discussed at that meeting and promised by our July 10, 1978, letter. The following alternatives were refined as follows:

1. Complete Retention Valley - Gering alone (CRV)

   Site Improvements:

Fencing	$27,000	
Acess Road	10,000	
Seeding	27,000	
	$64,000	= + 0.69¢/1000 gallons

2. Regional Complete Retention Valley - Regional RCRV

   a. Correction to O&M for trapezoidal ditch originally proposed for existing lagoons at Scottsbluff. Reduction from $22,000/year to $2,000 per year equals - 0.94¢/1000 gallons.

   b. Site Improvements:

Seeding (90 acres x $600/acre)	$ 54,000	
Fencing	50,000	
Access Road	10,000	
	$114,000	= + 0.50¢/1000 gallons

c. New force main at existing Scottsbluff lagoon to replace proposed trapezoidal ditch:

$150,000
-30,000
$120,000 net increase = + 0.53¢/1000 gallons

Using the revised figure of 38.85¢/1000 gallons from our July 10, 1978, letter for the first one, the final cost for Gering CRV is 39.54¢ per 1000 gallons. The final cost for the regional solution (RCRV) is 33.52¢ per 1000 gallons.

We have also pinpointed the limits to the proposed valley complete retention lagoon. Attached is a copy of the USGS map (Attachment 1) and soils map (Attachment 2) showing Sections 34, 35 and 36 northeast of the existing Scottsbluff lagoons. The area outlined in red on the soils map could be used for a complete retention lagoon. The Minatare-Janise soil series common to this site is described in Attachment 3 taken from the Scottsbluff Soil Survey. There is enough clay and clay loam soil underlying the site to make this a favorable location. There should be no need for an underdrain system or unusually high bentonite application rates. The cost figures shown earlier for complete retention can, therefore, be considered accurate.

Since the City decided in their July 26, 1978, letter to select an alternative involving upgrade of the existing facilities, we will consider pilot plant testing to determine whether microscreening is a feasible effluent clarification process.

Funding for this pilot plant work could be made available through a Step 1 grant increase. This application should be directed to George Ludwig, Grants Administrator at the Nebraska Department of Environmental Control in Lincoln, Nebraska. We suggest that both he and Nate Beezley be contacted by telephone prior to submitting the actual paperwork. Should Scottsbluff choose an upgrade option requiring effluent clarification, we would recommend a joint testing venture. This is important since we will probably restrict our funding to one pilot plant project unless it is clearly established that there are significant differences in the effluent composition. We request that you coordinate your submittal with Frank Koehler, City Manager of Scottsbluff. Should Scottsbluff choose an alternative not involving an effluent clarification component, then you may submit the application for testing by Gering alone. We have notified Scottsbluff of our position in this matter in a separate letter.

We request at least one month data over various operating conditions, including test analysis for the following parameters on the microscreen unit:

1. Flow and corresponding hydraulic loading rates in gpm/ft^2.
2. BOD_5 - influent, effluent and backwash.
3. TSS - influent, effluent and backwash.
4. Backwash - flow rate.
5. Temperature.
6. Head loss.
7. pH.

As part of this project, the City will need to provide baffles around the existing discharge structure. This will assure that floating material such as debris and algae mats will not unduly influence the results. We request that any final design provide baffles in the existing facultative cells to prevent short-circuiting and discharge of floating material.

The City and its consultant should contact the manufacturing representatives. The above represents the minimum requirements necessary to satisfy the Environmental Protection Agency. Your consultant is responsible for determining the extent of pilot plant testing necessary to design a project that meets permit limitations.

We would like to know what reaction the City of Gering has to the joint effluent clarification proposed in alternative RSD2 in the EIS. This regional alternative calls for upgrading the existing Gering facilities with new aerated lagoons as outlined in your letter. However, it calls for joint effluent clarification at or near Scottsbluff's existing lagoon system. Since this is dependent on Scottsbluff's choice of alternatives, we request that you contact them prior to any final decision on your part. The final cost after adjustments given earlier in this letter is 36.65¢/1000 gallons.

Stanko indicated at the July 17, 1978, meeting that they will have composite samples and flow data to verify the discharge levels in their letter of intent. We request a copy of that data for our files.

If there are any questions regarding this project you may refer them to Mr. Ralph Flournoy of our Engineering Branch at 816/374-2725.

Sincerely yours,

Paul M. Walker
Chief, Engineering Branch
Water Division

cc: Nebraska Department of Environmental Control
Bell, Galyardt and Wells
Wapora, Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ATTACHMENTS SAME AS JULY 7, 1978, LETTER TO SCOTTSBLUFF

Reproduced from
best available copy.

July 10, 1978

Gering, Nebraska
Project No. C310631-01

Honorable John McLellan, Jr.
Mayor of Gering
City Hall
Gering, Nebraska 69341

Dear Mayor McLellan:

This letter is an attempt to respond to your draft environmental impact statement (EIS) comments submitted April 18, 1978. We are attempting to allow for maximum local input into this process. The normal EIS process would allow 30 to 45 days for written comments after the public hearing (50 days in this case). These comments would then be incorporated in the final EIS with a recommended alternative. Therefore, your next comment letter must contain specific remarks regarding Gering's preferred alternative. We hope to reach tentative agreement on a selected alternative at the meeting scheduled for July 17, 1978, at 1:30 p.m. Since there is considerable industrial waste load in the Gering system, we encourage their participation, particularly Stanko Packing and any new or potential owners of the former Swift plant.

Reply to Letter from Bell, Galyardt and Wells

1. No comment.

2. No comment.

3. We will be attempting to define the actual siting for the valley irrigation and complete retention more specifically.

4. The cost for valley complete retention assuming land costs of $400.00 per acre is 38.05¢/1,000 gallons. This is a change of less than 1.5 percent.

5. The report uses a 1/8-inch per day seepage rate in the sizing of all lagoons. This corresponds to the May 28, 1974, design criteria for complete retention issued by the Nebraska Department of Environmental Control (NDEC). It is also based on a concern for the valuable local groundwater

supplies. The same May 28, 1974, NDEC criteria also specifies that the maximum allowable test percolation rate must not exceed 1/4-inch per day. Natural sealing processes would tend to reduce this figure to the 1/8-inch per day design criteria.

6. The EIS acknowledges the effect of late season application on sugar beet sugar content. This is outlined on page 242. Since reduced sugar content affects crop value, the net result is additional storage requirements and increased cost for the land application alternatives. This factor would be considered further before proceeding with the valley land application alternative. Since none of the land application alternatives are within 15 percent of the first three most cost-effective solutions, we see no reason to further analyze this factor.

7. We believe the EIS crop selection is typical of crops grown in the area and includes those crops which would provide a good cash return. We see no reason for a comprehensive study of boron sources in order to enlarge the crop selection.

8. Boron is a conservative element (not lost through volatilization). We believe that the concentration factors calculated for TDS during lagoon storage are valid for boron.

9. The EIS will be updated to reflect costs for a curtain drain system for all complete retention alternatives. Since land application is already low on the cost-effective ranking, we see no reason at this point to modify this analysis to include drainage collection systems for runoff and percolation.

10. The cost for providing a shelter belt planting will also increase the cost for land application alternatives. Therefore, we see no need to evaluate this line item.

11. No comment.

12. Wapora addressed the local management alternatives to the extent practical. Further discussion depends on the alternative chosen. We would be very interested in having the City's comments regarding these issues.

Letter from Wells and Haas

A. The uncontaminated cooling water from Swift and Company must be rerouted to storm sewers or recycled. This is one of the requirements of the model sewer use ordinance (Article V, Section 1) which the City would be required to adopt during Step 2.

The loadings for Stanko given in the EIS are acceptable for the projected production of 250,000 lb LWK/day. The unit loadings were not increased. The unit loadings were taken from the 1976 survey. The major question

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regarding Stanko is the validity of their letter of intent. The letter gives initial anticipated loadings; we need projections for design year capacity. The letter estimates current flow at 600 gallons/1,000 lb LWK. This is a low figure which would represent above average in-plant controls for a meat processing plant. The City should clarify this point with Stanko and ask them to resubmit their letter of intent. Until then, we would prefer to use the loadings outlined in the EIS.

B. We accept your comments regarding grease removals by particular pretreatment processes. The impact would be in operation and maintenance costs; total capital costs would not be changed significantly.

C. The final EIS will provide estimates of user charges and cost recovery payments for the selected alternative.

D. 1. See previous comments on land costs.

2. One of the major reasons for the construction cost differential between the storage lagoon for north site irrigation and the complete retention lagoon is the height of the dikes. Note that the complete retention lagoon (page 149) has a dike height of 6.6 feet from the bottom of the lagoon, while the storage pond has a dike height of about 15 feet (including freeboard) from the bottom. The difficulties in attaining this dike height in the soils common to the area result in a noticable cost difference.

E. 1. Those alternatives involving upgrade of existing facilities include both diffused air and dissolved air flotation. Should microscreening (see response to F.2.) be chosen for effluent clarification, an increase in treatment might need to be considered. This would be offset by the reduced capital and operation and maintenance costs for sludge. Therefore, we believe that the current cost estimates for SD1 and SD2 for Gering are reasonably accurate. Final treatment levels attainable would be determined from pilot plant testing of DAF and/or microscreening. The assumptions contained in the EIS for winter operation are based on the removal efficiencies currently achieved at loadings approaching 70 lbs/acre.

2. No comment.

3. The cost data for alternatives SD2, AIN, AIV and AIS include a capital cost of $264,000 for the 4.1-acre domestic waste aerated lagoon. Given the required horsepower of almost 190, we believe this estimate is acceptable. This aeration capacity is needed to assure adequate mixing during winter operation.

F. 1. We have seen some cost and operating data on microscreening which was encouraging. We would give pilot testing of this process serious consideration.

2. We note your flow schematic for a treatment process utilizing microscreening. The schematic involves the use of a 100-acre stabilization lagoon similar to the one proposed in alternative SD1 in the EIS. Sites for this new domestic lagoon would need to be carefully considered. Executive Order 11988 requires consideration of sites out of the floodplain. These sites may receive preferential cost consideration generally not to exceed 15-20 percent of the floodplain site. However, these costs must be weighed against the potential impacts on flood conveyance.

3. We agree in principle with your analysis of the advantages of microscreening. We have also reviewed the Envirex data as submitted with the City's comment letter and have discussed this system with them in some detail. It is obvious that progress has recently been made in design of this component. We are, however, concerned about the lack of operating data for lagoons receiving high strength meat packing waste and operating in a northern climate. Therefore, we feel that pilot data would be necessary. We would consider simultaneous pilot plant testing of DAF and microscreening for comparison of potential cost and removal efficiencies during various seasonal conditions. We believe, based on available information, that the type and distribution of algae is one important seasonal condition.

G. We note your costs analyses for complete retention, DAF and microscreening. We are in the process of reviewing those costs. We would like to discuss those costs at our July 17, 1978, meeting.

Additional Comments

1. The passage of the 1977 Clean Water Act has raised the federal grant for land application and complete retention to 85 percent. However, land costs for complete retention are still ineligible. The following figures are recalculated local costs for land application and complete retention:

	Local Costs (¢/1,000 gallons)	
	Under 92-500	Under 1977 Amendments
AIN	15.2¢	11.0¢
AIS	11.0¢	8.0¢
AIV	9.2¢	7.0¢
CRV	14.0¢	12.4¢

2. The cost figures for valley complete retention need to be revised to include costs for three items. One is a curtain drain system to control the high water table, the second is for site improvements including fencing, access roads and seeding, and the third is a capital cost error of about $61,000 that must be added. We will provide our final cost estimate for this alternative at our July 17, 1978, meeting.

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If there are any further questions regarding these matters, please refer them to Mr. Ralph Flournoy of our Engineering Branch. His telephone number is 816/374-2725.

Sincerely yours,

Paul M. Walker
Chief, Engineering Branch
Water Division

cc: Nebraska Department of Environmental Control
Bell, Galyardt and Wells
Wapora, Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

June 27, 1978

Terrytown, Nebraska
Project No. C310576-01

Honorable Barbara Carpenter
Mayor of Terrytown
City Hall
Terrytown, Nebraska 69341

Through: Nebraska Department of Environmental Control

Dear Mayor Carpenter:

We have received your consultant's comments regarding the draft environmental impact statement (EIS). This letter is an attempt to provide a response to those comments. We note that your letter recommends upgrading the existing plant to provide additional sludge handling. This is the most cost-effective alternative (No. 3 in the EIS) for Terrytown alone. However, we are also considering regional solutions. Since a regional solution may be recommended, we cannot approve, at this time, the Step 2 grant application for the option recommended by the Village. We would like to meet with the Village to discuss the issues involved prior to issuing the final EIS. We expect that this meeting can be held in four to five weeks. Wapora will be refining their cost analyses and this information will be forwarded to you prior to the meeting.

Reply to Bell, Galyardt and Wells Letter

1. No comment.

2. The problems listed on page M-1 or M-2 of the EIS represent problems that the Village needs to correct. The modifications given on page M-3 of the EIS should be seriously considered by the Village. Whether the final clarifier launder can drain the entire plant is not important.

3. Wapora is working on selection of more specific sites for alternatives in the valley area.

4. The land prices quoted in the draft EIS are being reevaluated for accuracy.

5. The percolation rates quoted in the EIS are not typographical errors. The 1/8-inch per day is the design standard required by the Nebraska Department of Environmental Control (NDEC) for complete retention lagoons, and the 1/4-inch per day is the maximum test percolation rate allowable for the initial construction.

6. The EIS acknowledges the effect of late season application on sugar beet sugar content. This is outlined on page 242. Since reduced sugar content affects crop value, the net result is additional storage requirements and increased cost for the land application alternatives. This factor would be considered carefully before proceeding with any land application alternative. Since none of the land application alternatives are within 15 percent of the most cost-effective solution, we see no reason to further analyze this factor.

7. We believe the crop selection is typical of irrigated crops grown in the area and includes those crops which would provide a good cash return. We see no reason for a comprehensive study of boron in order to enlarge the crop selection.

8. Boron is a conservative element (not lost through volatilization). We believe that the concentration factors calculated for TDS during lagoon storage are valid for boron.

9. The EIS will be updated to reflect costs for a curtain drain system for all complete retention alternatives. Since land application is already low on the cost-effective ranking, we see no reason at this point to modify this analysis to include drainage collection systems for runoff and percolation.

10. The cost for providing a shelter belt planting will also increase the cost for land application alternatives. Therefore, we see no need to evaluate this line item.

11. Wapora addressed the local management alternatives to the extent practical. Further discussion depends on the alternative chosen. We would be very interested in having the Village's comments regarding these issues.

If there are any questions regarding these matters, please refer them to Mr. Ralph Flournoy of our Engineering Branch. His telephone number is 816/374-2725.

Sincerely yours,

Paul M. Walker
Chief, Engineering Branch
Water Division

cc: Nebraska Department of Environmental Control
Bell, Galyardt and Wells
Wapora, Inc.

Addendum Number 7

Industrial User Charges and Cost Recovery Payment Estimates

INDUSTRIAL USER CHARGES

I. SCOTTSBLUFF

Daily Loadings:

	Flanery	Residential & Commercial	Current Design Loadings
Flow (mgd)	0.18	2.82	3.0
BOD$_5$ (lbs/day)	450	3940	4390
TSS (lbs/day)	300	4530	4830

Yearly Loadings:

Flow - 0.18 mgd x 6 days/wk x 52 wks/yr = 56.16 x 10^6 gallons/yr Flannery
2.82 mgd x 7 days/wk x 52 wks/yr = 1.026 x 10^9 gallons/yr Res. & Comm.
1.0326 x 10^9 gallons/yr Total

BOD$_5$ - 450 lbs/day x 6 days/wk x 52 wks/yr = 140,400 lbs/yr Flanery
2940 lbs/day x 7 days/wk x 52 wks/yr = 1,424,160 lbs/yr Res. & Comm.
1,574,560 lbs/yr Total

TSS - 300 lbs/day x 6 days/wk x 52 wks/yr = 93,600 lbs/yr Flanery
4530 lbs/day x 7 days/wk x 52 wks/yr = 1,648,920 lbs/yr Res. & Comm.
1,742,520 lbs/yr Total

Local Costs: \$181,600/yr including O&M and local capital costs

Assume distribution among parameters is:

Flow - 50% - \$90,800/yr
BOD$_5$ - 30% - 54,480/yr
TSS - 20% - 36,320/yr

Unit Charges:

Flow - $\frac{\$90,800/\text{yr}}{1.0826 \times 10^9 \text{ gallons/yr}}$ = 8.39¢/1000 gallons

BOD$_5$ - $\frac{\$54,480/\text{yr}}{1,574,560 \text{ lbs/yr}}$ = 3.46¢/lb

TSS - $\frac{\$36,320/\text{yr}}{1.742,520 \text{ lbs/yr}}$ = 2.08¢/lb

1. User Charges - Flanery

Flow - 8.39¢/1000 gallons x 56.16 x 10^6 gallons/yr = \$ 3,818/yr
BOD$_5$ - 3.46¢/lb x 140,400 lbs/yr = 4,858/yr
TSS - 2.08¢/lb x 93,600 lbs/yr = 1,947/yr
Total = \$10,623/yr
or
\$977/mo

2. Cost Recovery

EPA Grant - Upgrade = 580,000 (75% grant)
Microscreen = 1,037,000 (85% grant)
1,617,000 x 1.27 = \$2,054,000 or \$102,700/yr

These costs assume a linear relationship between the engineering costs for both portions for ease of calculation.

Assume costs are distributed:

Flow - 50% - 51,350
BOD$_5$ - 30% - 30,810
TSS - 20% - 20,540
102,700/yr for 20 yrs

Flanery

Flow - $\frac{5616 \times 10^6}{1.0826 \times 10^9}$ (51,350) = \$2,663/yr

BOD$_5$ - $\frac{140,400}{1,574,560}$ (30,810) = 2,747/yr

TSS - $\frac{93,600}{1,742,520}$ (20,540) = 1,103/yr
\$6,513/yr Total or \$542/mo

II. GERING

Daily Loadings:	Flow (mgd)	BOD$_5$ (lbs/day)	TSS (lbs/day)
City	1.16	1750	1940
Stanko	0.108	876	860
Swift	0.530	4432	3135
Lockwood	0.180	290	270
Future Ind.	0.260	500	500
	2.24	7848	6605

Yearly Loads:

Flow - 1.16 mgd x 7 days/wk x 52 wks/yr = 422 million gallons/yr City
1.08 mgd x 6 days/wk x 52 wks/yr = 337 million gallons/yr Ind.
759 million gallons/yr Total

BOD$_5$ - 1750 lbs/day x 7 days/wk x 52 wks/yr = 637,000 lbs/yr City
6098 lbs/day x 6 days/wk x 52 wks/yr = 1,902,576 lbs/yr Ind.
2,539,575 lbs/yr Total

TSS - 1940 lbs/day x 7 days/wk x 52 wks/yr = 706,160 lbs/yr City
4665 lbs/day x 6 days/wk x 52 wks/yr = 1,455,480 lbs/yr Ind.
2,161,640 lbs/yr Total

1. User Charges

Annual Cost = $184,000/yr including O&M and local capital costs

Flow - 40% - $73,600/yr
BOD$_5$ - 30% - 55,200/yr
TSS - 30% - 55,200/yr

Unit Charges

Flow - $\frac{\$73,600/\text{yr}}{759 \times 10^6 \text{ gallons/yr}}$ = 9.7¢/1000 gallons

BOD$_5$ - $\frac{\$55,200/\text{yr}}{2,539,575 \text{ lbs/yr}}$ = 2.17¢/lb

TSS - $\frac{\$55,200/\text{yr}}{2,161,640 \text{ lbs/yr}}$ = 2.55¢/lb

a. Stanko

Flow - 9.7¢/1000 gallons x 33.696 x 10^6 gallons/yr = $ 3,268/yr
BOD$_5$ - 2.17¢/lb x 273,312 lbs/yr = 5,930/yr
TSS - 2.55¢/lb x 268,320 lbs/yr = 6,842/yr
$16,040/yr
or
$1,337/mo

b. Swift Plant

Flow - 9.7¢/1000 gallons x 165 x 10^6 gallons/yr = $16,040/yr
BOD$_5$ - 2.17¢/lb x 1,382,784 = 30,006/yr
TSS - 2.55¢/lb x 978,120 = 24,942/yr
$70,988/yr
or
$5,916/mo

c. Lockwood

Flow - 9.7¢/1000 gallons x 56.16 x 10^6 gallons/yr = \$5,447/yr
BOD_5 - 2.17¢/lb x 84,240 lbs/yr = 1,828/yr
TSS - 2.55¢/lb x 90,480 lbs/yr = 2,307/yr
\$9,582/yr
or
\$798/mo

2. Cost Recovery

EPA Grant - Upgrade = \$ 573,000 (75% grant)
Microscreen = 904,000 (85% grant)
\$1,477,400 x 1.27 = \$1,876,298 or \$93,814/yr over 20-year recovery period

Assume costs are distributed:

Flow - 55% - \$51,598/yr
BOD_5 - 30% - 28,144/yr
TSS - 15% - 14,072/yr

a. Stanko

Flow - $\frac{33.696 \times 10^6}{759 \times 10^6}$ (51,598) = \$2,290/yr

BOD_5 - $\frac{273,312}{2,539,575}$ (28,144) = 3,029/yr

TSS - $\frac{268,320}{2,161,640}$ (14,072) = 1,747/yr
\$7,066/yr Total or \$589/mo

b. Swift

Flow - $\frac{165 \times 10^6}{759 \times 10^6}$ (51,598) = \$11,241/yr

BOD_5 - $\frac{1,382,784}{2,539,575}$ (28,144) = 15,324/yr

TSS - $\frac{978,120}{2,161,640}$ (14,072) = 6,367/yr
\$32,932/yr Total or \$2,744/mo

c. Lockwood

$$\text{Flow} - \frac{56.16 \times 10^6}{759}(51{,}598) = \$3{,}817/\text{yr}$$

$$\text{BOD}_5 - \frac{84{,}240}{2{,}539{,}575}(28{,}144) = 1{,}002/\text{yr}$$

$$\text{TSS} - \frac{90{,}480}{2{,}161{,}640}(14{,}072) = \frac{548/\text{yr}}{\$5{,}367/\text{yr}} \text{ Total or } \$447/\text{mo}$$